

# SOUTHERN POWER AND INDUSTRY

**OCTOBER, 1955**

**EIGHTH ANNUAL  
BETTER PRODUCTION  
ISSUE**

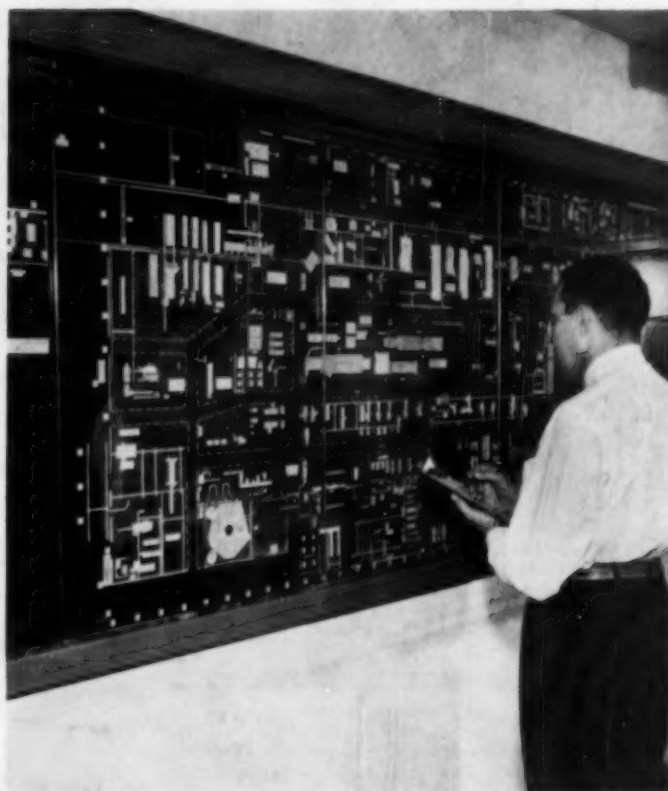
**74 Case Studies**

**Plant Service Equipment  
Piping and Accessories  
Power and Steam Supply  
Materials Handling  
Maintenance Procedures  
Production Equipment**

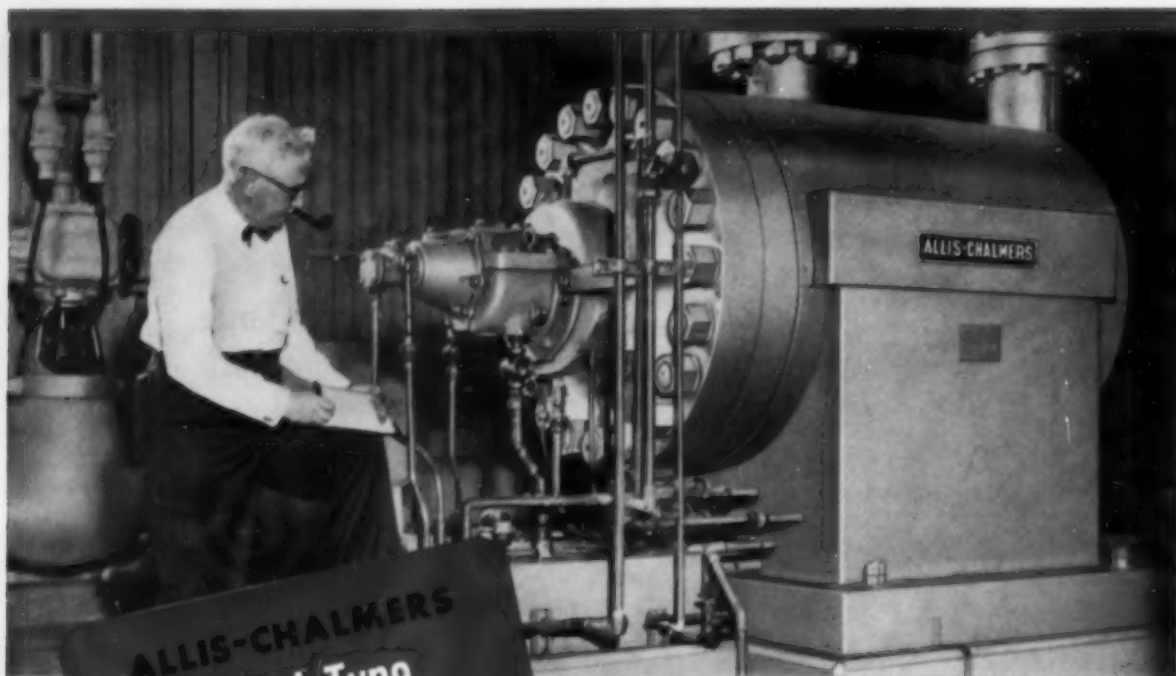
**Complete Contents on Page 3**



## **LAYOUT BOARD—LOUISVILLE Serves As Labor Saving Device**



This 5' x 20' layout of the Tube Turns Louisville plant simplifies planning when new equipment is installed and when facilities are to be rearranged. It also assists in streamlining work flow and production procedures. (See case No. 66 on page 120.)



## ALLIS-CHALMERS Barrel-Type BOILER FEED PUMPS

# In the Dallas Steam Electric Station

## OF THE DALLAS POWER & LIGHT COMPANY

### What Are Your Pump Needs?

Whether you require boiler feed, condensate, circulating or other power plant pumps—a careful study will reveal why more and more utilities are specifying Allis-Chalmers. Check the design features, the operating advantages, the provisions that make a pump easier to maintain, or service. You, too, will find it pays to standardize on Allis-Chalmers Power Plant Pumps.

### Complete Unit from One Source

Allis-Chalmers can supply the complete pumping unit—pump, motor and control—of coordinated design and manufacture. You get one responsibility—one guarantee of satisfaction.

Get complete information on Allis-Chalmers barrel-type boiler feed pumps. Call your Allis-Chalmers District Office or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 08B7899.

### Here Are Important Features that Keep Operating Costs Low:

- First stage has twin, single-suction impellers to give low NPSH requirement for highest efficiency under fluctuating loads.
- Impellers, mounted back to back, balance axial forces without use of balancing drum.
- Double volute casing maintains radial balance under fluctuating load.
- Expansion joint and shaft seals are brought to outside of pump where they may be inspected often and worked on easily, if required.

# ALLIS-CHALMERS



A-4799

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Volume 73

Number 10



# **YOUR FUEL COSTS go down when Clarage Unitherms go in...**

**AMONG** the many prominent users — Sutherland Paper with 13 Unitherms and 48 Clarage Unit Heaters (suspended models for smaller area service) in its newest plant.



## **Exclusive Feature saves you money**

Clarage's unique Syncrotherm Control maintains uniform heating with relatively low temperature air in constant circulation.

By-pass dampers control the amounts of air passing through and around heating coil. Result: better use of each BTU at lower cost. Investigate this and the other features of the Unitherm Unit Heater — available for steam or hot water operation, floor or ceiling installation, in a wide size range. Write for Catalog 1115. CLARAGE FAN COMPANY, Kalamazoo, Michigan.

# **CLARAGE**

... . **dependable equipment for  
making air your servant**

SALES ENGINEERING OFFICES IN ALL PRINCIPAL CITIES • IN CANADA: Canada Fans, Ltd., 4285 Richelieu St., Montreal

# 20 years of clean, economical engine performance

**THIS** power plant has used *Texaco Ursa Oils* for 20 years. Fairbanks-Morse engines in service include three model 33 slow speed diesels, one model 38 OP high speed diesel, and one model 31 AD 18 dual-fuel unit.

**THIS** plant (name on request) operates both straight diesel and dual-fuel engines — all of them lubricated with *Texaco Ursa Oil*. The Plant Superintendent says:

"Never, in more than 20 years, has *Texaco Ursa Oil* 'let us down.' Our engines stay clean, wear is negligible, and we enjoy real fuel economy."

This experience is typical. *Texaco Ursa Oil* does a great job of keeping engines clean. It stands up under heat and pressure . . . stands off oxidation and sludging . . . keeps rings free for proper compression and combustion. This means you'll use less fuel . . . spend less for maintenance.

There is a complete line of *Texaco Ursa Oils* to give your diesel, gas or dual-fuel engines the best "run" for your money. Leading engine builders O.K. them, operators everywhere use them. In fact—

For over 20 years, more stationary diesel h.p. in the U.S. has been lubricated with *Texaco* than with any other brand.

Get the full story from your *Texaco* Lubrication Engineer. Just call the nearest of the more than 2,000 *Texaco* Distributing Plants in the 48 States, or write:

☆ ☆ ☆

The Texas Company, 135 East 42nd Street, New York 17, New York.



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FOR ALL DIESEL, GAS AND DUAL-FUEL ENGINES

TUNE IN . . . TEXACO STAR THEATER starring JIMMY DURANTE on television . . . Saturday nights, NBC.

# SOUTHERN POWER AND INDUSTRY

Vol. 73  
No. 10

OCTOBER, 1955

N E P



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# *Facts and Trends*

## FOR SOUTHERN INDUSTRIAL AND POWER EXECUTIVES

October, 1955

- **FIELD APPLICATION** of inert gas-shielded electric arc welding is being used by The Chemstrand Corporation's Decatur, Alabama, maintenance operations. This type of welding is usually confined to fixed locations because of the cooling water required in its application.

When porosity and corrosion difficulties were experienced with welds made by the electric arc process on Schedule 5 and Schedule 10 stainless steel piping, a newly developed mobile and completely integral heli-arc welding machine overcame these difficulties.

Performance of piping in areas where corrosion of welds had been severe now has improved so markedly that additional mobile units are being added for maintenance operations. Inert gas-shielded electric arc welding is recognized as superior for thin stainless steels because of the cleaner, smoother, less porous welds it produces.

- **CHECKING STEAM TRAPS** -- Traps on steam tracers and jackets must function properly or a product freeze-up will occur. Monsanto Chemical Company in St. Louis, Mo., is successfully using the Vis-A-Plug, a simple, effective method of checking the operation of bucket type steam traps.

This small device screws into the trap in lieu of the normal test cock and permits a quick visual check as to whether the trap is functioning properly or not. At Monsanto Chemical, the plugs have succeeded in materially decreasing the trap checking time, which occurs once each shift. In addition, steam consumption has been reduced by prompt correction of malfunctioning traps.

- **POLYETHYLENE FOR SANDBAGGING** -- The Texas City plant of Carbide and Carbon Chemicals Company keeps on hand a supply of polyethylene bags filled with sand for diking in case of hurricanes or other emergencies. Polyethylene makes this ready supply possible for the plastic sheeting is not destroyed by rodents nor does it rot in long storage.

Polyethylene may be obtained in rolls of tubular form and cut to required lengths for filling with sand and sealing or tying the ends. If outdoor bag storage for extended periods is necessary, a suitable ultraviolet light resistant polyethylene compound should be used.

- **HIRING JOURNEYMAN ELECTRICIANS?** A short time ago the Chief Electrician of a North Carolina manufacturing plant worked up a series of questions and answers for industrial electricians based on experience and the National Electric Code. Questionnaire was developed to determine the qualifications of applicants for the position of Journeyman Electrician in the plant.

The questions and answers, scheduled for early publication in SP&I, are non-technical and cover problems, methods and general knowledge which is required almost daily by the practical maintenance man. Any electrician who can make 70 or better on this test can be considered to have a good, practical, workable knowledge of industrial electrical work.

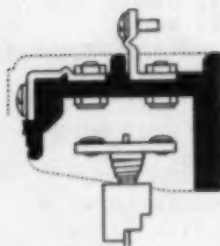
(Continued on page 6)



# Bulletin 709 Starters are SO TROUBLE FREE

... .. *because they are* SO SIMPLE

## DOUBLE BREAK, SILVER ALLOY CONTACTS—NO MAINTENANCE

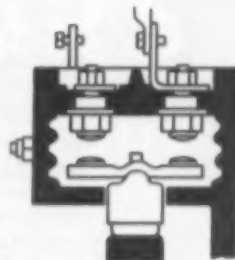


SIZES 0 & 1

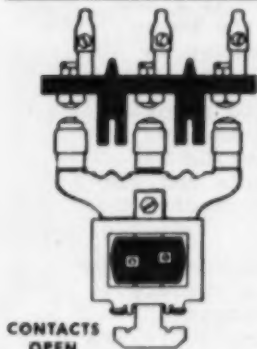
Some 20 years ago, when Allen-Bradley announced the new Bulletin 709 solenoid starter, a big feature was the change from single break, copper-to-copper contacts to double break, silver alloy contacts. A warning on the name plate said: DO NOT FILE, CLEAN, OR DRESS CONTACTS.



At first, maintenance electricians paid little attention to this request. Who had ever heard of running motor starters without contact maintenance? But, today, the dependability of Allen-Bradley starters is taken for granted. They have proved they are good for millions of trouble-free switching operations.



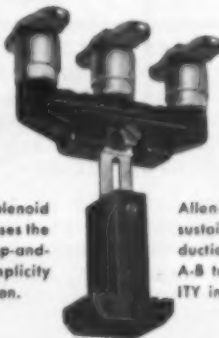
SIZES 2 TO 7



CONTACTS OPEN

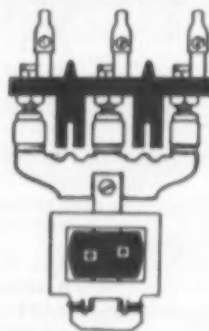
## ONLY ONE MOVING PART—NOTHING TO RUST AND STICK

The Allen-Bradley solenoid starter design was new and revolutionary in 1934. By doing away with clapper contacts, it eliminated hinged linkages, pivots, pins, and bearings. Only one moving part... the one-piece solenoid plunger... opens and closes the contacts with a simple up-and-down motion. Such simplicity assures unfailing operation.

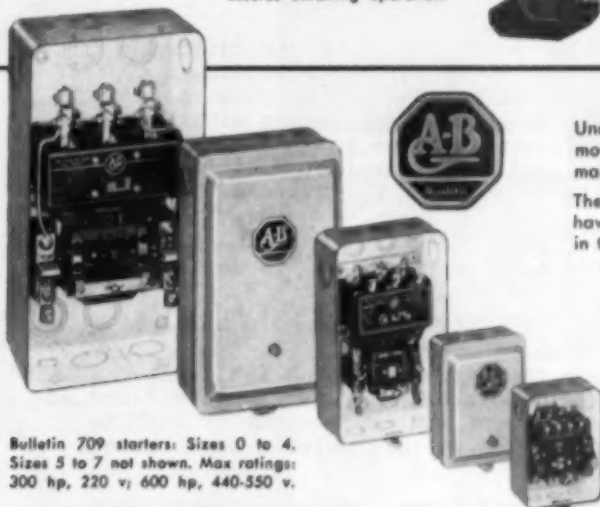


Today, millions of Allen-Bradley solenoid relays, contactors, and switches are in active use. They have set a standard of performance which has expanded the use of automatic controls.

Allen-Bradley solenoid controls sustain almost unbelievable production records. Look for the A-B trademark. It means QUALITY in motor control.



CONTACTS CLOSED



Bulletin 709 starters: Sizes 0 to 4. Sizes 5 to 7 not shown. Max ratings: 300 hp, 220 v; 600 hp, 440-550 v.

Under the same operating conditions a machine with many moving parts is more likely to develop trouble than a simpler machine with fewer moving parts.

The same rule holds true for motor starters. Most starters have complicated linkages, bearings, hinges, pins, and pivots in their mechanisms. Each moving part is a potential troublemaker. Allen-Bradley Bulletin 709 magnetic starters are SIMPLE—they have ONLY ONE MOVING PART. If you want maintenance free motor controls... specify Allen-Bradley. Let us send you the latest A-B information—the A-B Handy Catalog.

Allen-Bradley Co.  
1328 S. Second St., Milwaukee 4, Wis.  
In Canada—  
Allen-Bradley Canada Ltd., Galt, Ont.

# ALLEN-BRADLEY SOLENOID MOTOR CONTROL

## CONSULT YOUR LOCAL ALLEN-BRADLEY REPRESENTATIVE

ALBUQUERQUE—A & A Supply Co., 114 Morningstar Dr., N. E., Tel. 5-5506  
ATLANTA—W. R. Colverley, 1000 Peachtree St., N. E., P. O. Box 7086, Ste. C., Tel. Bldg. 6833  
BALTIMORE—H. M. Wood & Co., 124 Light St., Tel. MULberry 5-4643-4  
BIRMINGHAM—J. L. Howarth Co., Inc., 3021 Seventh Ave., So., Tel. 53-1171  
CHARLESTON—W. J. Hess & Son, Room 310 Morrison Bldg., 815 Quarrier St., Tel. 2-5323  
CHARLOTTE—Le Roy P. Spoon, 307 Lincoln St., Tel. EDison 4-6334  
DALLAS—J. K. Webb, 2810 McKinney Ave., Tel. TAnalua 6179  
HOUSTON—Wilson Electrical Equip. Co., 2930 Commerce Ave., Tel. Capital 8-1557  
JACKSONVILLE—Robert P. Smith & Co., 2031 Hendricks Ave., Tel. 9-9474  
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KNOXVILLE—Bowditch & Co., 1311-C N. Broadway, P. O. Box 3145, Tel. 4-2513

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## Facts and trends (continued from page 4)

- ▶ **BETTER PRODUCTION CASE STUDIES** from manufacturing, power and large service plants are presented in this 9th ANNUAL BETTER PRODUCTION ISSUE of SP&I. Many of these procedures and improvements, plant tested in Southern and Southwestern plants, can be put to work towards increasing production in your own plant. Case studies are necessarily brief. Emphasis is concentrated on direct information -- need and objectives, description of improvements, and results.  
  
To assist you in putting these ideas and methods to work, equipment manufacturers are identified in the articles. If additional information is desired, contact your local mill supply house, the manufacturer's representative in your area, the equipment manufacturer's headquarters, or write The Editors, SP&I, 806 Peachtree St., N.E., Atlanta 5, Georgia. There is no obligation.
- ▶ **MINIMUM OYSTER SHOCK**, high and low tides, and a variety of boat sizes had to be given special consideration in the design of the materials handling system at the Ballard Fish and Oyster Company in Norfolk, Va.  
  
System, which unloads oyster boats and conveys oysters to shucking tables, has a capacity of 120 tons of oysters per hour, and two boats may be unloaded at one time. The Jeffrey Manufacturing Co. equipment installed includes belt conveyors, both portable and stationary; apron conveyors; shuttle belt conveyors; and scraper conveyors. The latter carry away refuse.  
  
All transfer points were designed so that the oysters would receive a minimum of shock. To cope with high and low tide and a variety of boat sizes, portable belt conveyors that discharge to hinged apron conveyors, pivot at the head end. The lower ends of these conveyors may be raised or lowered depending upon conditions.
- ▶ **CATALYTIC EXHAUST PURIFIER**, recently introduced by Oxy-Catalyst, is good for use on leaded gasoline -- by far the most common type of fuel for in-plant trucks. The new Oxy-Muffler eliminates by catalytic burning as much as 90% or more of the carbon monoxide and most of the aldehyde and hydrocarbon fumes in engine exhausts. Fork lift trucks, power sweepers, and other in-plant vehicles can be operated with greater safety in enclosed plant areas.
- ▶ **VISUAL PLANNING SERVICE** paid off when the Cocker Machine and Foundry Co. had to arrange tools and machinery in a 40,000 sq ft expansion at Ranlo, N.C. Machine tools, warehouse, erecting department, shipping and office space were to be housed in the new building.  
  
As part of a long range expansion program, a three dimensional plant model was secured from the Visual Planning Equipment Co. This firm supplied accurate scale models of all plant equipment and machinery. By more accurate placement and arrangement of machine tools, this visual planning aid saved considerable time, effort and money.  
  
The models have helped overall efficiency of operation in that all machine tools required for the next five years (although not purchased) have been located in the plant layout.
- ▶ **\$\$\$ FOR YOUR IDEAS** -- Send your ideas, methods and short-cuts to SP&I. Payment is made for suitable material -- a photo or rough sketch will make your idea more valuable. Articles from maintenance and production men in Southern and Southwestern plants are preferred. Material must not have appeared elsewhere nor been sent to another publication.

Write the editors for additional information on any of the above items.  
SOUTHERN POWER & INDUSTRY. 806 Peachtree St., N.E. Atlanta 5, Ga.



# CONTINENTAL CONVEYORS

*Serve Every Type of Industry*

## CONTINENTAL CHECK LIST For Every Industry

### CONVEYORS

BELT CONVEYORS  
FLIGHT CONVEYORS  
SCREW CONVEYORS

### ELEVATORS

BUCKET ELEVATORS  
SCREW ELEVATORS  
BELT OR CHAIN  
CONTINUOUS  
SUPER-CAPACITY  
PERFECT DISCHARGE

### FEEDERS

BELT FEEDERS  
PLATE FEEDERS  
SCREW FEEDERS  
RECIPROCATING  
VANE FEEDERS  
HEAVY DUTY CAST  
MANGANESE  
APRON FEEDERS

### POWER TRANSMISSION EQUIPMENT

BEARINGS  
STEEL PULLEYS  
CAST IRON PULLEYS  
CHAIN DRIVES  
SHAFTING  
COLLARS  
CLUTCHES  
SPEED REDUCERS  
V-BELT DRIVES  
SHAFT HANGERS

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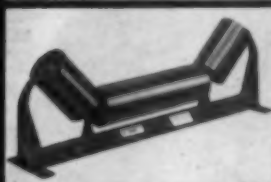
SHIP LOADING



STANDARD DUTY IDLER



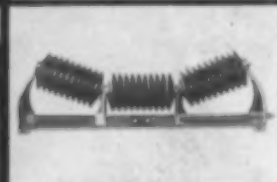
QUARRIES



GRAIN HANDLING CONVEYOR



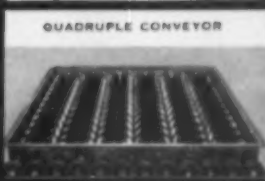
FEED MILL



RUBBER DISC IMPACT IDLER



MINES



QUADRUPLE CONVEYOR



COAL MINES



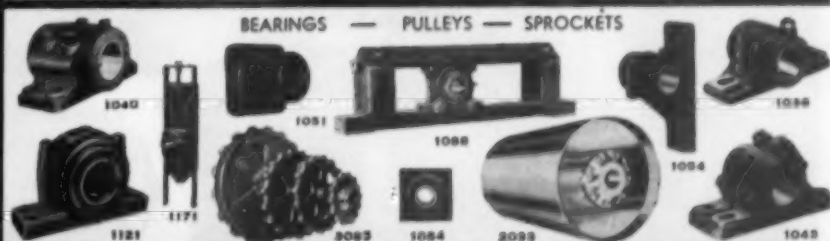
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INDUSTRIAL DIVISION  
**CONTINENTAL GIN COMPANY**

BIRMINGHAM, ALABAMA

ENGINEERS



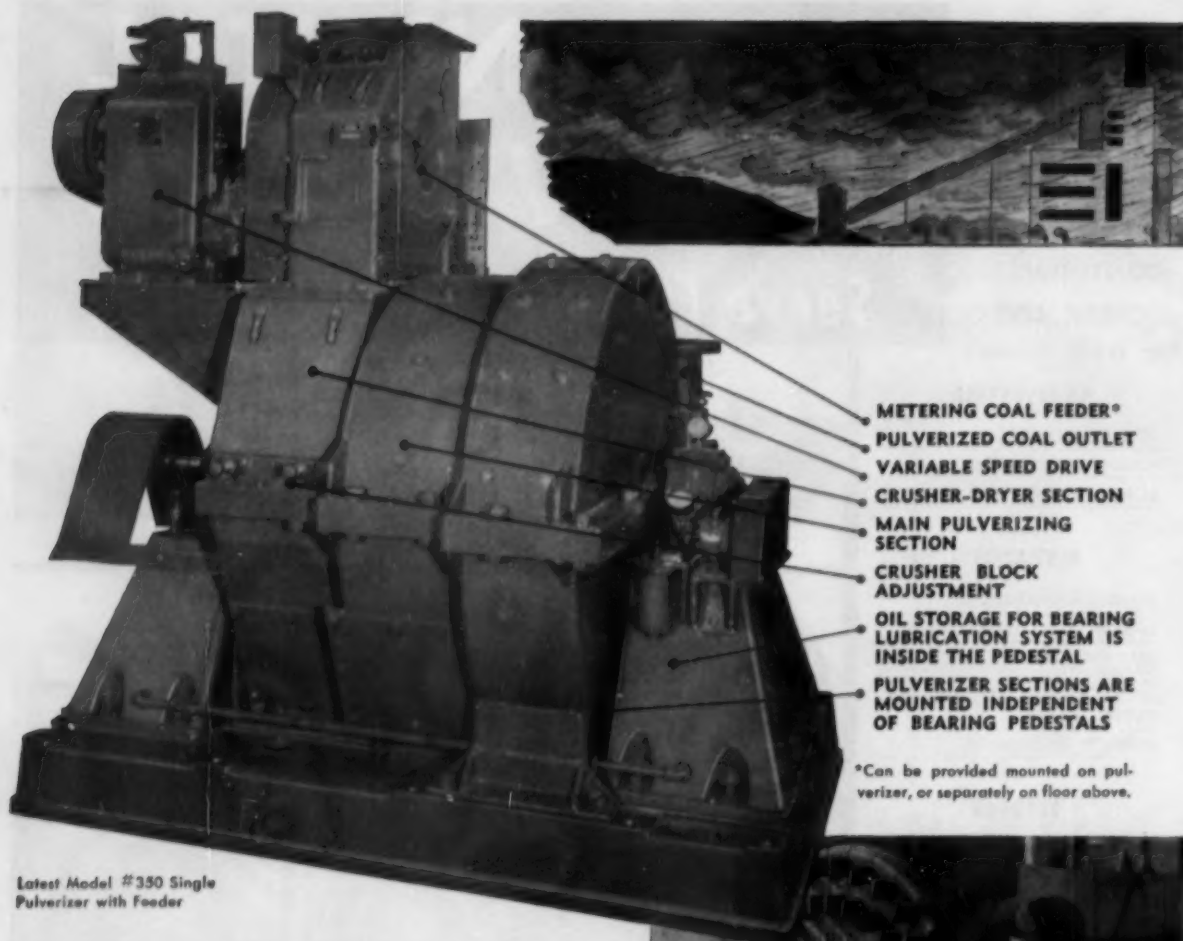
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MANUFACTURERS

MEMPHIS • NEW YORK 17, NEW YORK





- METERING COAL FEEDER\*
- PULVERIZED COAL OUTLET
- VARIABLE SPEED DRIVE
- CRUSHER-DRYER SECTION
- MAIN PULVERIZING SECTION
- CRUSHER BLOCK ADJUSTMENT
- OIL STORAGE FOR BEARING LUBRICATION SYSTEM IS INSIDE THE PEDESTAL
- PULVERIZER SECTIONS ARE MOUNTED INDEPENDENT OF BEARING PEDESTALS

\*Can be provided mounted on pulverizer, or separately on floor above.

Latest Model #350 Single Pulverizer with Feeder

Riley has manufactured coal pulverizers since 1925. In 1950 the Riley "50" Pulverizer Series was introduced. Tough, durable Tungsten Carbide applied to pulverizing parts provides extra long continuity of service and low maintenance even with high ash coals. In addition, a crusher-dryer section precrushes the coal, rejects foreign material, and flash-dries the wettest coals, with the result capacity is maintained. Illustration at right shows moving pegs and the pulverizer's accessibility.



#550 Duplex Leaves Riley's Detroit Plant for Colorado

The #550 Duplex, the largest model, is actually a combination of two #550 Single Pulverizers and has a 46,000 lbs/hr rated capacity with 50 grindability coal. Public Service Co. of Colorado has installed seven of these units. Detroit Edison Company has ordered six Duplex Units for a steam generating unit with a capacity of two million pounds per hour.

Cross section of typical #550 Duplex Pulverizer. Coal enters crusher-dryer section (at ends) — here it is precrushed, flash-dried and tramp iron is rejected. Coal is pulverized to required fineness in second sections by attrition. Coal, uniformly mixed with air is blown to burners (center sections).

**RILEY DESIGNS, MANUFACTURES AND INSTALLS COMPLETE STEAM GENERATING UNITS AND**

**SOUTHERN POWER & INDUSTRY for OCTOBER, 1955**



# Even *Hurricane Rains* can't lower capacity of Riley Pulverizers

Let it rain... let it pour... seven to twelve inches or more... the flash drying feature of the crusher-dryer section of the Riley Pulverizer will eliminate any amount of moisture in coal... even when water actually runs out of the feeder.

*To prove this statement read this report made by a Riley Engineer after last year's hurricane CAROL—*

"Last week, we visited a power plant of a Southern New England Public Utility to observe operation of the new Feeder-Crushers. The Chief Engineer stated he feels they are saving on pulverizer maintenance and most important on unit outage. The first of last month during hurricane "Carol" it rained 5 to 6 inches on their coal pile. They burned coal with water running out of it with no load drop for the first time in the plant's history."

Since this report was written this power plant has operated continuously and without loss of load through hurricanes Edna, Connie and even Diane with its torrential rains. Thus, you can be assured that as long as they are not engulfed in flood waters Riley Pulverizers equipped with Riley Feeder-Crushers will maintain capacity

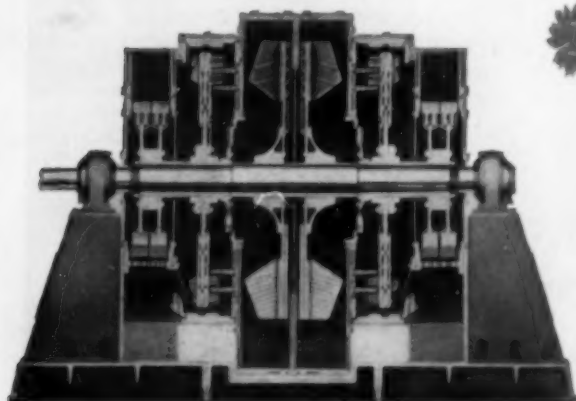
even with the wettest coals. What's more, Riley Pulverizers have tungsten carbide faced pulverizing parts to efficiently pulverize, with low maintenance, even the most abrasive coals... coals containing over 20% ash. Riley Pulverizers will also maintain stable flame at the burners over wide load ranges.

## *Some other Riley Pulverizer advantages:*

- No metal to metal contact
- Quiet, vibrationless operation
- Low foundation cost
- Small overall space
- Insignificant Btu loss with rejections
- Ease of maintenance
- No adjustments required for fineness
- Ability to use high primary air temperature with increase in efficiency
- Minimum of lubricating difficulty
- Ease of automatic regulation
- No auxiliary air required for sealing
- Minimum explosion and fire hazard

## *A few Public Utilities sold on Riley Pulverizers*

- |                             |                                    |
|-----------------------------|------------------------------------|
| Public Service Co. of Colo. | Columbus & Southern Ohio Elec.     |
| The Potomac Edison Co.      | Iowa Illinois Gas & Electric Co.   |
| Detroit Edison Co.          | So. Carolina Public Service Auth.  |
| Monongahela Power Co.       | City of Owensboro, Kentucky        |
| Utah Power & Light Co.      | Upper Peninsula Generating Co.     |
| Northern States Power Co.   | East Kentucky Rural Electric Coop. |
| Hartford Electric Light Co. | Dairyland Power Cooperative        |
| Corn Belt Power Coop.       | Superior Water Light & Power Co.   |
| Taiwan Power Co.            | The Western Colorado Power Co.     |
| Interstate Power Co.        | Central Ohio Light & Power Co.     |
| Central Iowa Power Coop.    | Connecticut Power Co.              |



A survey of your plant by a consulting engineer could show ways of making surprising savings in your power costs.

**RILEY**  
*Stoker Corporation*  
 WORCESTER, MASSACHUSETTS

Boston, New York, Philadelphia, Buffalo, Washington, Pittsburgh, Cleveland, Detroit, Chicago, Cincinnati, Charlotte, New Orleans, Atlanta, St. Louis, Kansas City, St. Paul, Tulsa, Houston, Denver, Salt Lake City, Los Angeles, San Francisco, Portland, Seattle.

**FUEL BURNING EQUIPMENT FOR PUBLIC UTILITY AND INDUSTRIAL POWER AND HEATING PLANTS**

# NEWS for the South and Southwest

## C & O—Personnel Changes

G. G. Ritchie, Coal Traffic Manager—Engineering, CHESAPEAKE & OHIO RAILWAY COMPANY, Richmond, Va., recently announced the retirement of MINOTT BROOKE as General Fuel Service Engineer at Huntington, West Virginia. Mr. Brooke recently completed 21 years of service with the C&O.

Other appointments included the following: T. H. DUFFY, General Fuel Service Engineer, Huntington, West Virginia; A. S. MORTON, Fuel Service Engineer, Richmond, Virginia; and C. S. DENNIS, Assistant Fuel Service Engineer, Greensboro, North Carolina.

## Foster Wheeler—Gulf Coast

FOSTER WHEELER CORPORATION, New York, N. Y., has announced the appointment of BERNARD F. GILLIGAN as Sales Manager of process plants division, Gulf Coast district. Mr. Gilligan will make his headquarters



Bernard F. Gilligan

in Houston and will handle sales of oil refinery processes and chemical processes in that area.

A graduate of Stevens Institute of Technology with a degree of mechanical engineering, Mr. Gilligan has been project manager for a number of important refinery projects built by Foster Wheeler in the U. S. A. and Europe.

Foster Wheeler Equipment Division sales in the Gulf Coast area will continue to be handled from the HOUSTON office by Wilson Pais who has been appointed manager of equipment sales.

## Southern Sales Manager For Kuhlman Electric Company

THE KUHLMAN ELECTRIC COMPANY, Crystal Springs, Mississippi, recently announced the appointment of JAY G. GATES as Southern sales manager for the Transformer Division. He will be regional sales manager in 11 southern states: North Carolina, South Carolina, Georgia, Florida, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas with the exception of the El Paso area.

He will coordinate relations between customers, sales personnel and the Kuhlman factory at Crystal Springs, Miss., and will also act as liaison between the company's southern activities and the Bay City, Michigan, headquarters. Mr. Gates is located at 3960 Eastline Drive, Jackson, Miss.



## Georgia Section, A.I.E.E. Starts Fall Program

Heading up the 1955-56 technical activities of the Georgia Section, AMERICAN INSTITUTE OF ELECTRICAL ENGINEERS are: Vice Chairman T. J. ALLEN, Supt. of Transmission, Georgia Power Company; Chairman JOHN C. AGER, Mgr. Georgia Sales Area, General Electric Company; and Secretary-Treasurer W. F. WILLETT, Georgia Utilities Representative, Westinghouse Electric Co.

## Southern Distributors For Stephens-Adamson Mfg. Co.

The Standard Products Division of the STEPHEN-ADAMSON MFG. CO., Aurora, Illinois, has announced the appointment of several southern and southwestern stocking distributors.

The following organizations will handle the company's line of belt conveyor idlers and return rollers, centrifugal loaders and pilers, car pullers, winches, and allied conveyor machinery:

SOUTHERN CHEMICAL SALES CO., Board of Trade Bldg., Louisville, Ky.; DABNEY-HOOVER SUPPLY CO., INC., 45 W. Virginia Ave., Memphis, Tennessee; LINDER, COX & CO., 109 Allamanda Rd., Lakeland, Florida; and LANGDON SUPPLY CO., 1317-19 Union Ave., Kansas City 7, Mo.

The Standard Products Division of Stephens-Adamson meets a growing need for the company's conveyor component on an "off the shelf" basis. The company announces that regional warehouses will be established to facilitate customer service.

**NOW!**  
*Electronic*  
**LIQUID  
 LEVEL  
 CONTROL** by

**FISHER**



Fisher Governor Company widens its scope of liquid level measurement and control with the Fisher "Belmont Series" of capacitance type electronic liquid level controllers. The "Belmont" can be used on most non-adhesive liquids—chemicals, oil, water, refrigerants, liquefied gases. Operating temperature ranges of the sensing elements are from 500° F. to -425° F. Operating pressure range is vacuum to 50,000 psi or higher. Only two simple adjustments for liquid and differential control.

Fisher Governor Company has purchased the Thermo Instruments Company, Belmont, California, which has manufactured and marketed the "Belmont" liquid level control the past ten years.

Write for Bulletin F-100

**FISHER GOVERNOR COMPANY • Marshalltown, Iowa**  
 WORLD LEADER IN RESEARCH FOR BETTER PRESSURE AND LIQUID LEVEL CONTROL

**FISHER**  
*Our 75<sup>th</sup>*  
 ANNIVERSARY

## News for the South and Southwest (continued)



Gale W. Bennett

### Norton—Refractories

GALE W. BENNETT has been appointed a refractories engineer by NORTON COMPANY. In this capacity, he will be responsible for the sales territory which includes eastern Pennsylvania, the lower half of New Jersey and all of the states of MARYLAND, VIRGINIA, NORTH and SOUTH CAROLINA.

### Lane-Wells—Gulf Coast

THE LANE-WELLS COMPANY, one of the Dresser Industries, recently announced the opening of new sales and service offices at EL CAMPO and SWEETWATER, TEXAS, and at EL DORADO, ARKANSAS. This makes a total of fifty Lane-Wells branches in the Gulf Coast area.

### General Electric Hickory, N. C.

Two subcontracts for construction of the GENERAL ELECTRIC COMPANY's new \$20,000,000 distribution transformer plant at HICKORY, N. C., have been awarded by Alex C. Boisseau, plant manager.

Successful bidders were the PATTERSON-EMERSON-COMSTOCK Co. of ALABAMA, INC., BIRMINGHAM, ALA., for the electrical contract; and the HICKS AND INGLE Co., CHARLOTTE, N. C., for the mechanical contract. Previously awarded were contracts for grading to BLYTHE BROTHERS Co., INC. and for general construction to J. A. JONES Co., both of Charlotte.

The plant will be completed in mid-1956 and will eventually employ 1,100 persons.

### J. F. Pritchard—Maryland

TATE ENGINEERING & SUPPLY COMPANY, INC., Baltimore, Md., has been appointed sales representative for the state of Maryland by J. F. Pritchard and Company of California, Kansas City, Missouri, manufacturer of cooling towers, for air conditioning and industrial applications, and Pritchard "Hydryers," packaged dehydration units for drying air or other gases.

Personnel of the Tate organization is as follows: Robert L. Tate, President; L. M. Carey, Secretary-Sales Engineering Manager; Donald L. Tate, Treasurer-Sales Engineer; Albert W. Clark, Sales Engineer; Matthew Fairbairn, Sales Engineer; William MacDerment, Sales Engineer; Charles H. Henkel, Inside Sales; and Kennard Smith, Inside Sales—Instrument Repair.

### Theratomic Laboratory Sterlington, Louisiana

THERMATIC CARBON COMPANY, an affiliate of Commercial Solvents Corporation, has begun construction of new laboratory and office facilities adjacent to its plant in STERLINGTON, LOUISIANA.



Frederick W. Barlow

FREDERICK W. BARLOW has been engaged as laboratory director. Mr. Barlow, a graduate of the University of Toronto with a degree in chemical engineering, has had twelve years experience in the rubber and carbon black industries with Godfrey L. Cabot, Inc., Neville Chemical Company and Dominion Rubber Company.

Work is also under way to increase Theratomic's production of Thermal type carbon black by 15%. Construction will be completed in January, 1956.

## FUTURE EVENTS Of Engineering Interest

AMERICAN SOCIETY OF LUBRICATION ENGINEERS and AMERICAN SOCIETY OF MECHANICAL ENGINEERS, Lubrication Activity Group, E. M. Phillips, Sec'y, 5 Westminister Road, Marblehead, Mass.

Oct. 10-12, Second Lubrication Conference, Antlers Hotel, Indianapolis, Ind.

AMERICAN SOCIETY FOR METALS, William H. Eisenman, Sec'y, 7201 Euclid Ave., Cleveland 2, Ohio.

Oct. 17-21, National Metal Exposition and Congress, Commercial Museum and Convention Hall, Philadelphia, Pa.

NATIONAL SAFETY COUNCIL, R. L. Forney, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 17-21, 43rd National Safety Congress and Exposition, Conrad Hilton, Congress, Morrison and La Salle Hotels, Chicago, Ill.

NATIONAL ASSOCIATION OF CORROSION ENGINEERS, A. B. Campbell, Sec'y, 1061 M & M Bldg., Houston 2, Texas.

Oct. 18-21, South Central Region Meeting, Houston Hilton-Shamrock Hotel, Houston, Texas.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS, E. K. Stevens, Mgr. International Exposition Co., 450 Lexington Ave., New York 17, N. Y.

Nov. 14-18, Chicago Exposition of Power & Mechanical Engineering, Chicago Coliseum, Chicago, Ill.

AIR CONDITIONING & REFRIGERATION INSTITUTE, Washington, D. C.

Nov. 28-Dec. 1, 9th Annual Air Conditioning & Refrigeration Exposition, Auditorium, Atlantic City, N. J.

25TH EXPOSITION OF CHEMICAL INDUSTRIES, E. K. Stevens, Mgr. International Exposition Co., 450 Lexington Ave., New York 17, N. Y.

Dec. 5-9, Exposition, Commercial Museum and Convention Hall, Philadelphia, Pa.

EDISON ELECTRIC INSTITUTE, 430 Lexington Ave., New York 17, N. Y.

Feb. 6-10, National Industrial Electric Heating Conference, Netherland Plaza Hotel, Cincinnati, Ohio.

### Johnson-March Corporation Appoints Southern Agents

Recent appointments of the JOHNSON-MARCH CORPORATION, Philadelphia, Pa., include the following companies: CHARLES A. HERRON, Birmingham, Ala., covering Alabama, eastern Mississippi and western Florida; LINDER, COX & Co., Lakeland, Fla., the state of Florida; OSGOOD AND ASSOCIATES, Atlanta, Ga., the state of Georgia; THE POWER SPECIALTY Co., Nashville, Tenn., reaching southern Kentucky and all of Tennessee east of the Tennessee river; and THE RHODES EQUIPMENT Co., St. Louis, Mo., covering eastern Missouri, southern Illinois, western Kentucky, and south-western Indiana.

These manufacturers' agents will distribute the Johnson March Corporation's dust control equipment to the general industrial and public utility fields.

More News—Page 148



# Boiler Refractories

Bulletin R-36

## CONTENTS:

### How important are Refractories?

Discussion of basic requirements  
of refractories and critical refrac-  
tories areas in boilers. PAGE 3

### What causes Refractories to fail?

Includes discussion of hot load  
strength, spalling, chalking, slag-  
ging, abrasion, erosion, shrinkage  
and expansion. PAGE 5

### Description and Properties of:

FIREBRICK PAGE 7

INSULATING FIREBRICK PAGE 9

REFRACTORY CASTABLES  
PAGES 11 AND 12

REFRACTORY PLASTICS  
PAGES 14 AND 15

REFRACTORY MORTARS  
PAGES 14 AND 15

Marine Boilers  
PAGES 16 AND 17

Ashpit Refractories  
PAGES 18 AND 19



PAGE 10



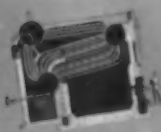
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PAGE 12



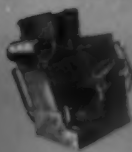
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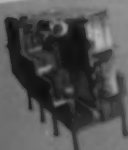
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PAGE 9



PAGE 5



PAGE 1

## New 20-page Handbook

### FOR SELECTING BOILER REFRACTORIES

Contains detailed discussions of critical refractories  
areas in both refractory-lined and water-cooled boilers.  
Your local B&W Representative will be glad to send  
you a copy. Just ask for Bulletin R-36.

**The Babcock & Wilcox Company**  
Refractories Division  
General Office: 161 East 42nd Street, New York 17, N.Y.



**B&W REFRACTORIES PRODUCTS:** B&W Allmul Firebrick • B&W 80 Firebrick  
B&W Junior Firebrick • B&W Insulating Firebrick • B&W Refractory Castables, Plastics and Mortars  
**OTHER B&W PRODUCTS:** Stationary & Marine Boilers and Component Equipment  
Chemical Recovery Units • Seamless & Welded Tubes • Pulverizers • Fuel Burning Equipment  
Pressure Vessels • Alloy Castings

**BABCOCK  
& WILCOX**

THE BABCOCK & WILCOX CO.  
REFRACTORIES DIVISION  
GENERAL OFFICE: 161 EAST 42ND ST. NEW YORK 17, N.Y.  
WORKS: AUGUSTA, GA.

B-000

# you've got to be good to stay in front

After 69 years' service to Southern industry, Standard Oil lubricants are still *first* in sales. There's only one answer. To stay first your product must be *good*, your services *more than satisfactory*. Standard Oil was first to offer special lubricants for new machinery, and for over half a century these lubricants have been *constantly* improved. So, today, as two generations ago, Standard Oil lubricants still stand as the *finest*. Wherever there are moving parts and friction, in your plant, there are special types of Standard Oil to afford *maximum* protection. Whatever your lubrication requirement may be, there's a Standard Oil lubricant to fit your needs—designed to do your particular job with economy, dependability and efficiency.



**STANDARD  
OIL**

## LUBRICANTS

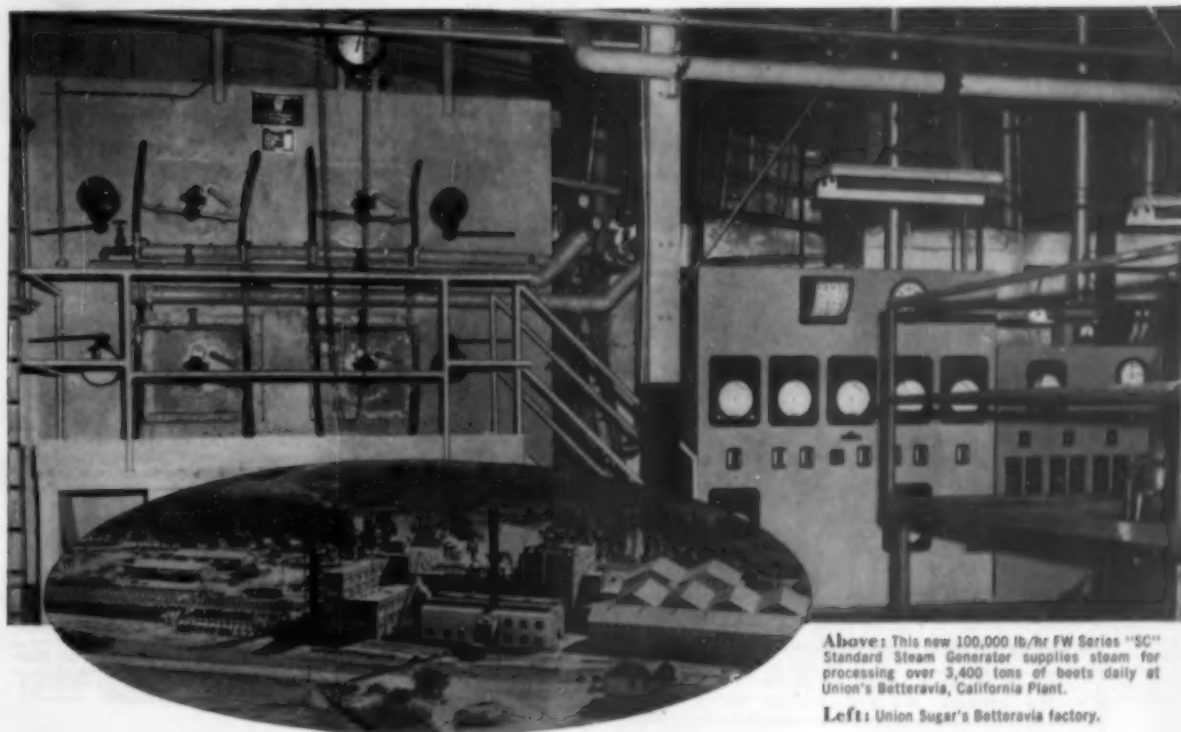
*The combined facilities for research, testing and engineering behind Standard Oil Lubricants are unequalled.*

**Standard Oil Company**  
(KENTUCKY)



# Union Sugar

*obtains low-cost steam*



Above: This new 100,000 lb./hr. FW Series "SC" Standard Steam Generator supplies steam for processing over 3,400 tons of beets daily at Union's Betteravia, California Plant.

Left: Union Sugar's Betteravia factory.

with a new



## Series "SC" steam generator

This new Foster Wheeler "SC" Series Standard Steam Generator is a part of a continuing modernization and expansion program being carried on by the Union Sugar Division of Consolidated Foods Corporation, a pioneer California beet sugar company.

In selecting this unit, Union has taken advantage of the latest development by Foster Wheeler toward the reduction of industrial steam costs. This new generator embodies advanced design features which result in low installation, operating and maintenance expenses.

Maximum dependability under continuous full-

load is assured by such advantages as: completely water-cooled furnace, fully drainable superheater, highly efficient boiler surface arrangement, and unrestricted circulation. The design also provides flexibility in heat recovery equipment, balanced or pressurized firing and steam purifying systems.

**Fuels:** Oil or gas—**Steam Temperatures:** Saturated to 950F—**Capacities:** 50,000 to 190,000 lb./hr.—**Pressures:** to 1500 psi.

For complete information, write for Bulletin B 55-4, Foster Wheeler Corporation, 165 Broadway, New York 6, N. Y.

# FOSTER WHEELER

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# WHERE TO GET IT

## And How to Do It



-INDEX OF HELPFUL BOOKLETS, BULLETINS, REFERENCE LITERATURE-

Cooperating with leading manufacturers of equipment and supplies, SPI makes available for the asking without cost or obligation, the following valuable bulletins, booklets, handbooks and catalogs.

Check the list, fill in Coupon, mail to SOUTHERN POWER & INDUSTRY. (Coupon Post Cards on pages 17 and 18.) This service restricted to those interested in the operation or design of Industrial, Power and Service Plants.

### STEAM TURBINES... FURNACES BOILERS, STOKERS, BURNERS

**1 STACKS, FANS, DUST COLLECTORS FOR POWER AND INDUSTRIAL PLANTS**—Catalog 309—Application data and illustrative views of Thermix fan-stacks, fans, tubular and duplex dust and soot collectors, multicones, and recirculators for flue gas control.—PRAT-DANIEL CORPORATION AND THERMIX ENGINEERING COMPANY.

**5 CONTINUOUS BLOWOFF**—Bulletin—Describes how stainless steel rotary disc valve offers fifteen calibrated orifices to provide any rate of flow. Sediment chamber protects orifices from plugging. No moving parts to wear out or leak. Read how to cure blow-off problems and save on fuel.—THE UNIBLOW VALVE COMPANY.

**20 SPREADER STOKER**—Bulletin F-630-A10M, 14 pages—Helps those choosing a spreader stoker to get the most for their investment. It points out many factors to be considered in selection, and includes engineering drawings and photos of typical installations.—AMERICAN ENGINEERING CO.

**29 CONTINUOUS BLOW-OFF**—Bulletin, 8 pages—Gives the basic facts about boiler blow-off, and describes the Madden system of control of continuous blow-off for the removal of solids and impurities from steam releasing surfaces.—THE MADDEN CORPORATION.

**37 STEAM BOILERS**—Bulletin SB-59, 16 pages—Describes and illustrates complete line of steam generating equipment, with sectional views, diagrams, plant applications. Condensed reference material for consulting and power engineers.—ERIE CITY IRON WORKS.

**39 BOILER-BURNER UNIT**—Catalog 592—Gives complete information about Kewanee-Petro boiler-burner matched unit for high or low pressure heating, power and process steam using oil, gas or combination oil-gas.—PETRO.

**41 PACKAGED DRAFT INDUCER**—Bulletin I-55—Shows how space problems can be solved by the company's packaged power plant draft inducer. Units may be turbine or motor-driven. Fan and bearing assembly may be withdrawn from housing for inspection and servicing.—L. J. WING MFG. CO.

**49 MULTISTAGE TURBINES**—Bulletin B-146—Describes straight condensing, straight non-condensing, condensing bleeder, non-condensing bleeder, low pressure condensing, mixed pressure condensing, mixed pressure bleeder turbines: 250 to 5,000 hp.—THE TERRY STEAM TURBINE CO.

**51 WATER-TUBE STEAM GENERATOR**—Booklet "Type A," 8 pages—Gives data and specifications for complete factory assembled steam generator units in nine sizes, from 5300 to 25,000 lb per hr, for pressures up to 400 psi, designed to provide fully automatic firing with oil, gas or stoker-fired coal.—SUPERIOR COMBUSTION INDUSTRIES, INC.

**56 WATER TUBE BOILERS**—Booklet—Describes details of stoker—oil or gas or combination gas/oil, 10 to 350 hp to 250 psi; designed for easy conversion to any fuel.—QUEEN CITY ENGINEERING COMPANY, INC.

**71 STEAM ACCUMULATORS**—Bulletin RA-52-S—Describes well known steam accumulators to balance steam supply and steam demand in intermittent processes such as are found in brewing food processing, refining, paper and textile plants.—FOSTER WHEELER CORP.

**73 BOILER HEAT TRANSFER**—4 page bulletin explains a patented method of cyclonic combustion to produce improved heat transfer in boiler installations. Illustrates resulting steam generators and discusses their application and operation.—CYCLOTHERM DIVISION, U. S. RADIATOR CORP.

**76 GAS BURNER**—Bulletin—Describes the Rectilinear gas burner, an application of the venturi principle which provides high input through narrow rectangular openings for firing—in a horizontal plane through fire doors or small openings over hand-fired coal grates or stokers—or for firing in a vertical plane on either side of stoker or oil burner.—THE WEBSTER ENGINEERING COMPANY.

**82 DUAL-MOTOR DESLAGGING**—Bulletin 1914—Describes retractable soot blower for effective water wall deslagging. One motor extends the swivel tube fast to save time, and retracts it fast to escape high temperatures. The other motor rotates the tube slowly to clean thoroughly. High power jets combined with large mass produce high striking power.—COPES-VULCAN DIVISION, CONTINENTAL FOUNDRY & MACHINE CO.

**87 STEAM TURBINES**—Single Stage—Bulletin 598 describes features and characteristics of company's type DH steam turbines in horizontal and vertical models.—DEAN HILL PUMP COMPANY, INC.

**98 FUEL OIL TREATMENT**—Bulletin 80, 4 pages—Explains how Nalco SR-155 improves combustion and stops corrosion and sludge formation in fuel oil tanks, lines and equipment.—NATIONAL ALUMINATE CORP.

### FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

**109 DEAERATING HEATERS, SPRAY TYPE**—Catalog W-191—Describes and illustrates Graver spray deaerating heaters and other types of Graver deaerating heaters—data covering performance, results and applications—typical plant flow diagrams—accessory equipment.—GRAVER WATER CONDITIONING COMPANY.

**111 CENTRIFUGAL PUMPS, SINGLE STAGE, DOUBLE SUCTION**—Bulletin 225—Gives exterior and sectional views, engineering features and specifications, and dimensions, rating table, etc., of Type DB and DBM single stage, double suction pumps 20 to 200 gpm, 20 to 170 ft total head, 1150 and 1750 rpm.—WARREN STEAM PUMP CO., INC.

**113 DESIGNED SUMPS**—R. H. Bird, Engineering Designer for Fearless, presents a technical article on the Proper Proportioning of Sumps, complete with illustrations, diagrams and engineering data.—FEARLESS PUMP DIVISION, FOOD MACHINERY & CHEMICAL CORP.

**116 MOTOR PUMPS FOR BULK STATION SERVICE**—Form 7281—Describes and illustrates this unit in its various applications with cross-sectional views and engineering data.—INGERSOLL-RAND CO.

**120 CONTINUOUS BLOW-OFF SYSTEM**—Publication 4081—The savings possible through continuous blow-off as applied in many modern boiler plants.—COCHRANE CORP.

**144 FLUID DRIVES**—Catalog, 24 pages—Describes and illustrates Type VB Class 4 Gyrol fluid drives. Eight sizes are listed, with speeds to 1800 rpm and 100 to 2500 hp.—AMERICAN BLOWER CORPORATION.

**155 PROPORTIONING PUMPS**—Bulletin 52—Contains data on chemical feed packaged units made up of sturdy steel storage tank and high pressure low capacity proportioning pump—application and specification data.—THE BIRD-ARCHER COMPANY.

**160 BOILER FEED PUMPS**—Bulletin 109—Gives complete details and application data on a wide variety of precision-built boiler feed pumps, with capacity from 100 to 2700 gpm and pressures up to 2000 psi—both split case and barrel types. Particularly helpful are charts determining vapor pressure and density of water at temperatures up to 550 F, etc.—PACIFIC PUMPS, INC.



**167 ROTARY PUMPS**—Bulletin 207—Describes the features and advantages, and outlines the engineering details of Blackmer rotary pumps. These have been manufactured since 1904 and incorporate the outstanding advantages of "automatic adjustment for wear," and economical replacement of parts.—BLACKMER PUMP CO.

**170 HEAT EXCHANGERS**—Bulletin 120 & 124 describe Aero units which cool liquids and gases by evaporative cooling with atmospheric air, removing heat at rate of input, and precisely controlling temperature. Solves problems of water availability, quality or temperature.—NIAGARA BLOWER CO.

**176 HEATER MAINTENANCE**—Bulletin 1H-9 and Check Chart—Gives points to be checked in unit heater maintenance. Installation and maintenance procedures for Wing industrial heaters.—L. J. WING MFG. CO.

#### INSTRUMENTS—METERS CONTROLS—REGULATORS

**200 TEMPERATURE REGULATORS**—Bulletin 229—Gives information regarding the No. 11 self-operated regulator, used on water and oil heaters, tanks, vats, kettles, dryers, process equipment, etc. Tables for selecting proper size illustrate broad scope, and give pertinent application data.—THE POWERS REGULATOR CO.

**202 ORIFICE FLOW METERS**—Bulletin, 3 pages—Describes orifice meters used for the control of continuous flow of liquids, and of similar solids removal from steam and gas releasing surfaces, available in pressures up to 650 psi.—THE MADDEN CORPORATION.

**209 LIQUID LEVEL CONTROL**—Catalog—Describes Magnetrol liquid level control in which a sleeve, raised and lowered with a non-magnetic tube, attracts or releases an Alnico magnet attached to a mercury switch. Standard model can be easily adapted to meet any special requirement for pressure, temperature or corrosive liquid. Units available for controlling level changes from .0025-in. to 150-ft. with multi-stage switching when desired.—MAGNETROL, INC.

**216 PNEUMATIC PRESSURE TRANSMITTER**—Bulletin—Describes the Ashcroft transmitter and receiver gauge which use pneumatic means to transmit pressure measurements from their source to a central point.—MANNING, MAXWELL & MOORE, INC.

**217 WATER COLUMNS AND GAGES**—Bulletin 9-2-52, 4 pages—Illustrates and describes a line of boiler specialties, including round body water gages, safety water columns, round body bronze gages, liquid level gages. Tables and specifications.—ERNST WATER COLUMN & GAGE COMPANY.

**218 FUEL CUT-OUTS**—Brochure D2—Describes electrode type equipment for installation on water columns to provide fuel cut-out, high and low water level alarms and pump cut-in and cut-off, for pressures to 1100 psi.—RELIANCE GAUGE COLUMN CO.

**222 PRESSURE REGULATORS**—Catalog 70—Gives complete detailed information covering applications, operation and specifications of Reducing Valves, Pump Pressure Regulators and Back-Pressure Regulators. Included is a simple, practical method for selecting size of regulators.—MASON-NEILAN REGULATOR CO.

**246 DRAIN OR SAMPLING VALVE**—Data Sheet No. 270, 2 pages—Describes and illustrates the company's No. 22 valve which has the valve stem seating on the outside of the valve body making it completely self-draining. Features covered include outside screw and yoke construction, recommended pressures and materials.—JERGUSON GAGE & VALVE CO.

**253 FEEDWATER CONTROL**—Bulletin 105-C discusses problems encountered in feedwater control and tells how Bailey three-element air-operated feedwater control helps solve them.—BAILEY METER CO.

**267 EASY READING THROUGH LIQUID LEVEL INDICATOR**—Bulletin WC-1832—Gives the advantages of remote liquid level indicators reporting at convenient sight level, the levels in boilers, heaters, tanks and other vessels—up to 1800 psi.—YARNALL-WARING COMPANY.

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## BUSINESS REPLY CARD

FIRST CLASS PERMIT NO. 982, SEC. 34.9, P. L. & R., ATLANTA, GA.

Equipment and Review Editor  
SOUTHERN POWER AND INDUSTRY  
806 Peachtree St., N. E.  
Atlanta 5, Ga.

Please send me without obligation, free booklets described in the October, 1955, issue of SOUTHERN POWER AND INDUSTRY as circled below.

1	5	20	29	37	39	41	49	51	56	71	73	76
82	87	98	109	111	113	116	120	144	155	160	167	170
176	200	202	209	216	217	218	222	246	253	267	274	280
308	309	328	337	360	366	400	404	412	414	424	428	463
466	493	495	509	511	518	536	566	603	614	620	629	641
647	676	702	703	704	714	738	755	810	821	828	856	861
864	902	926	927	936	937	V-1	V-2	V-3	V-4	V-5	V-6	V-7
V-8	V-9	V-10	V-11	V-12	V-13	V-14	V-15	V-16	V-17	V-18	V-19	V-20
V-21	V-22	V-23	V-24	V-25	V-26	V-27	V-28					

Also send further information on following New Equipment (page 130).

K-1	K-2	K-3	K-4	K-5	K-6	K-7	K-8	K-9	K-10	K-11
K-12	K-13	K-14	K-15	K-16	K-17	K-18	K-19	K-20	K-21	K-22
K-23	K-24	K-25	K-26	K-27	K-28	K-29	K-30			

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City .....

Zone .....

State .....

# WHERE TO GET IT

## And How to Do It



-INDEX OF HELPFUL BOOKLETS, BULLETINS, REFERENCE LITERATURE-

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**1 STACKS, FANS, DUST COLLECTORS FOR POWER AND INDUSTRIAL PLANTS**—Catalog 369—Application data and illustrative views of Thermix fan stacks, fans, tubular and duplex dust and soot collectors, multicones, and recirculators for flue gas control.—PRAT-DANIEL CORPORATION AND THERMIX ENGINEERING COMPANY.

**5 CONTINUOUS BLOWOFF**—Bulletin—Describes how stainless steel rotary disc valve offers fifteen calibrated orifices to provide any rate of flow. Sediment chamber protects orifices from plugging. No moving parts to wear out or leak. Read how to cure blow-off problems and save on fuel.—THE UNIBLOW VALVE COMPANY.

**20 SPREADER STOKER**—Bulletin F-559-AIOM, 14 pages—Helps those choosing a spreader stoker to get the most for their investment. It points out many factors to be considered in selection, and includes engineering drawings and photos of typical installations.—AMERICAN ENGINEERING CO.

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**39 BOILER-BURNER UNIT**—Catalog 802—Gives complete information about Kewanee-Petro boiler-burner matched unit for high or low pressure heating, power and process steam using oil, gas or combination oil-gas.—PETRO.

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**82 DUAL-MOTOR DESLAGGING**—Bulletin 1016—Describes retractable soot blower for effective water wall deslagging. One motor extends the swivel tube fast to save time, and retracts it fast to escape high temperatures. The other motor rotates the tube slowly to clean thoroughly. High power jets combined with large mass produce high striking power.—COPES-VULCAN DIVISION, CONTINENTAL FOUNDRY & MACHINE CO.

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### FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

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466	493	495	509	511	518	536	566	603	614	620	629	641
647	676	702	703	704	714	738	755	810	821	828	856	861
864	902	926	927	936	937	V-1	V-2	V-3	V-4	V-5	V-6	V-7
V-8	V-9	V-10	V-11	V-12	V-13	V-14	V-15	V-16	V-17	V-18	V-19	V-20
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**218 FUEL CUT-OUTS**—Brochure D2—Describes electrode type equipment for installation on water columns to provide fuel cut-outs, high and low water level alarms and pumps cut-in and cut-off, for pressures to 1100 psi.—RELIANCE GAUGE COLUMN CO.

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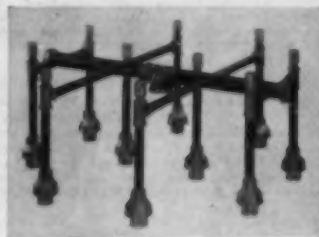


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**ELGIN SOFTENER CORPORATION**

132 North Grove Street, Elgin, Illinois  
In Canada: G. F. Sterne & Sons Ltd., Brantford

# Reichhold Chemicals, Inc. *Saves Money with QC BOILER!*



REICHOLD CHEMICALS, INC. Charlotte, N. C.

## Cost of produced steam reduced by 15 to 20%!

The installation of a 10,000 lbs/steam/hr Queen City "bent tube" water tube boiler is a real money-saver for Reichhold.

Cost of steam is reduced 15 to 20% which represents a saving of hundreds of dollars monthly. These savings, **plus** the continuous steam pressure maintained by the QC boiler under rapid and extreme fluctuating loads guarantees economical plant operation.

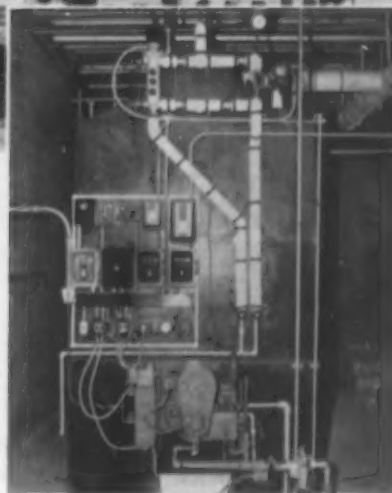
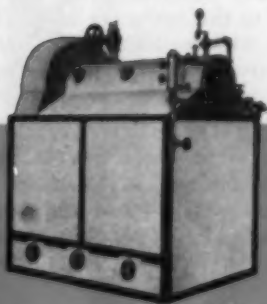


Photo shows front panel of boiler installation.

The Reichhold installation is combination gas and oil fired, with a **30-second push-button changeover!** Coal, gas, oil or combination gas/oil firing units from 300 to 15,000 lbs/steam/hr, up to 250 psi.

For more steam, faster and drier, at less cost, install a QC water tube boiler in your plant.



For complete information, write

**Queen City  
Engineering Co.**

P. O. BOX 2103, CHARLOTTE, NORTH CAROLINA



**"We  
eliminated Motor  
Burnouts and cut  
new installation  
costs — by using  
Fusetron dual-  
element Fuses!"**

"Our organization services some 43 Alfalfa Mills in the central Nebraska area.

"We know, from experience, that overloads and single phasing are two of the most common causes for motor failures in these mills.

"In order to give these motors the protection they need, we use Fusetron fuses in motor-running protection sizes. As a result, we have eliminated motor burnouts for our customers.

"In addition, on new installations, we have found that smaller switches can be used with proper size Fusetron fuses.

"We can pass this substantial saving along to our customers and still give them safer protection than can be had with ordinary protective devices."

**Max T. Moore**, Vice-President  
Industrial Electric Service, Inc.  
Kearney, Nebraska



**Here's why Fusetron dual-element fuses  
give DOUBLE protection to large motors**

Of course, large motors are protected with thermal cutouts or overload relays. But experience has shown that such devices sometimes stick or fail to operate. When they do, the motor burns out.

On normal installations, by replacing fuses used for short-circuit protection with Fusetron fuses of motor-running protection size, you get the same short-circuit protection PLUS double protection against motor burnout from overload or single phasing.

If thermals or relays fail to operate for any reason, the Fusetron fuses will act independently to **SAVE THE MOTOR**.

**And Fusetron fuses protect against waste of  
space and money — permit use of proper  
size panels and switches.**

On motor circuits Fusetron fuses can be used in sizes near to the operating load. That cannot be done with ordinary fuses. It is possible with Fusetron fuses because they have a tremendous time-lag that prevents them from opening on starting currents or other harmless overloads.

This means that on new installations for motor circuits you can save space and money because *proper* size Fusetron fuses permit using *proper* size switches and panels instead of *oversize*.



## You too, can profit by the 10 point protection of Fusetron fuses



**Play Safe!**  
... install  
**Fusetron and**  
**BUSS HI-CAP Fuses**  
throughout the  
entire Electrical  
System.



On new construction, tell  
your architect to specify  
this Safer, Better Protection.

- 1 High interrupting capacity — protect against heaviest short-circuits. Have proven on tests to open safely on circuits set to deliver in excess of 100,000 amperes.
- 2 Protect against needless blows caused by excessive heating — lesser resistance results in cooler operation.
- 3 Protect against needless blows caused by harmless overloads.
- 4 Provide thermal protection — for panels and switches against damage from heating due to poor contact.
- 5 Protect against waste of space and money — permit use of proper size switches and panels.
- 6 Protect motors against burnout from overloads.
- 7 Give DOUBLE burnout protection to large motors — without extra cost.
- 8 Protect motors against burnout due to single phasing.
- 9 Make protection of small motors simple and inexpensive.
- 10 Protect coils, transformers and solenoids against burnout.

For more information on Fusetron fuses write for bulletin FIS.

### FOR LOADS ABOVE 600 AND UP TO 5,000 AMPS . . . USE BUSS HI-CAP FUSES

They have unlimited interrupting capacity to handle any fault current regardless of system growth.

They can be coordinated with Fusetron fuses on feeder and branch circuits to limit fault outages to circuit of origin.

Write for bulletin HCS.

BUSSMANN MFG. CO. (Division of McGraw Electric Co.) UNIVERSITY AT JEFFERSON

TRUSTWORTHY NAMES IN  
ELECTRICAL PROTECTION

ST. LOUIS 7, MO.



# NITROPARAFFINS

*on Stream!*



Sterlington, Louisiana

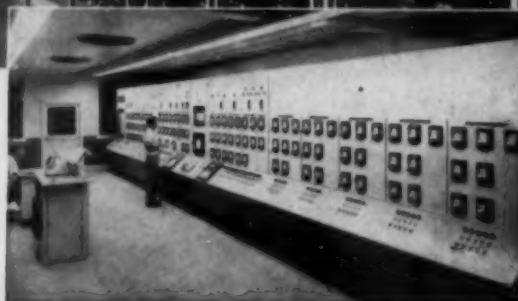
## WORLD'S FIRST COMMERCIAL NITROPARAFFIN PLANT NOW IN PRODUCTION

Shipments are now being made from Commercial Solvents Corporation's new plant at Sterlington, Louisiana. Completely designed by CSC engineers, the new plant marks a major step in the company's long-term petrochemical development. The new facilities will produce over 10 million pounds of four basic nitroparaffins — Nitromethane, Nitroethane, 1-Nitropropane, and 2-Nitropropane. In addition, the new plant will turn out multi-million pound quantities of the derivatives listed at right, many of which have achieved outstanding industrial usefulness. This unique family of chemicals opens up entirely new fields with extraordinary potential for all industry.

For full technical data and samples, write to:

**COMMERCIAL SOLVENTS CORPORATION**

260 MADISON AVENUE, NEW YORK 16, N. Y.



Control panel contains over 100 miniature recorders and controllers. A unique data reduction unit continually scans and records all operating conditions.

### BASIC NITROPARAFFINS

Nitromethane Nitroethane 1-Nitropropane 2-Nitropropane

### NITROPARAFFIN DERIVATIVES

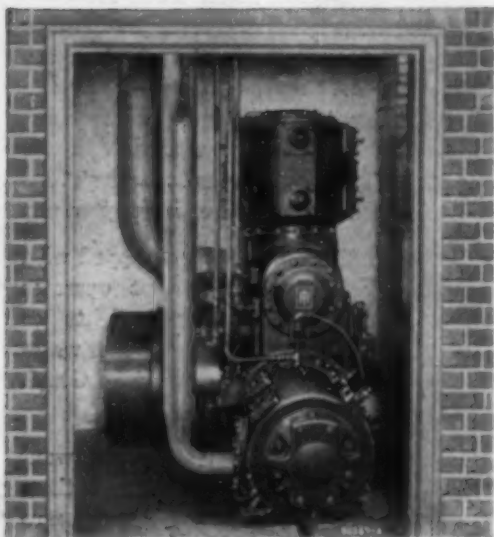
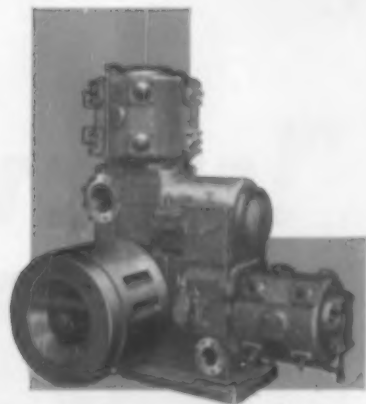
Alkaterges  
Aminohydroxy Compounds  
(AMP; AMPD)  
Chloronitroparaffins  
Diamines  
Hydroxylamine Salts  
(HAS; HS)  
Nitrohydroxy Compounds



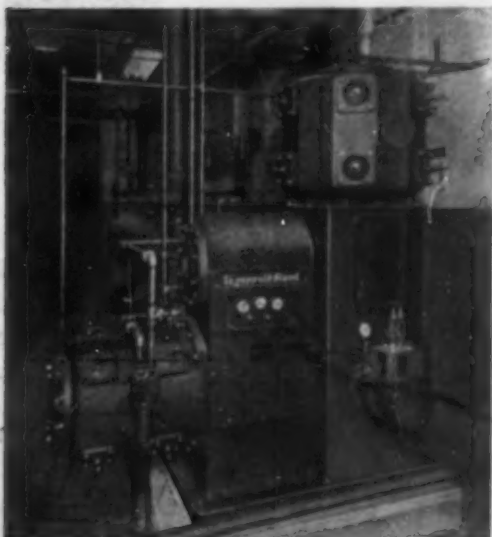
**INDUSTRIAL  
CHEMICALS**

# MORE AIR POWER in less floor space

*That's one of the many advantages  
offered by this space-saving **XLE** compressor:*



*A bronze company squeezed this XLE into a small, unused storage room.*



*A safety-razor manufacturer found plenty of space for this XLE installation in a screened-off basement corner.*

**Packaged design** for minimum floor space, and specially balanced for minimum foundation...ideal for skid-mounting.

**Easy to operate**...push button starting, grouped controls, automatic force-feed lubrication, automatic condensate removal, automatic air-operated starting unloaders and capacity control.

**Easy to install or relocate**...ready-to-run, assembled shipment...simplified air and water piping.

**Easy to maintain**...simplified long-life construction...full-floating, cool-running, aluminum-alloy bearings that require no adjustment...no need to open the sealed crankcase which stays clean inside...streamlined exterior also easy to keep clean.

**Low operating costs**...new high-efficiency, long-life I-R Type A Channel Valves result in compressor efficiency comparable to the largest units...durable, high-efficiency tube-and-fin inter-cooler saves water...efficient direct-connected motor.

**Built for reliable, continuous full-load service**...sizes 125, 150, 200, 250, 300, 350 horsepower...discharge pressures 80 to 125-psi, two stage...write for more information today.



## Ingersoll-Rand

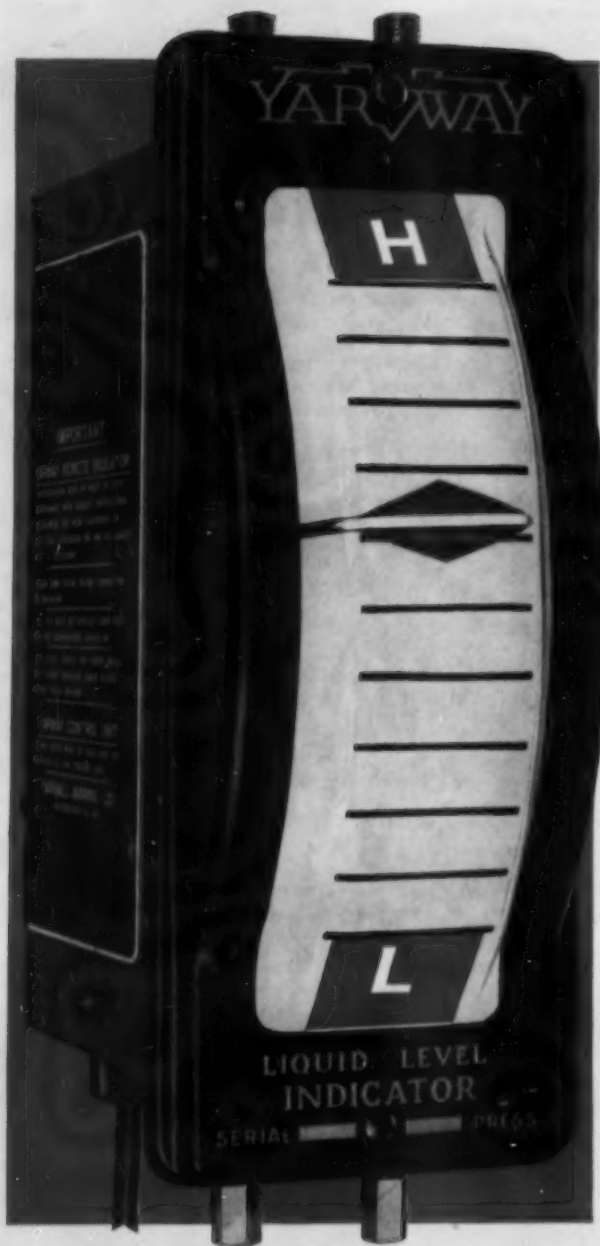
1-105 11 Broadway, New York 4, N. Y.

COMPRESSORS • AIR TOOLS • ROCK DRILLS  
TURBO BLOWERS • CONDENSERS • CENTRIFUGAL PUMPS  
DIESEL AND GAS ENGINES



*And here's a compact, space-saving installation of an XLE compressor, aftercooler and air receiver in a tool plant*

# "this is



## NEW! WIDER VISION!

Clear, brilliant readings from any angle, are possible with the new "wide vision" face on the Yarway Remote Liquid Level Indicator. Pointer is always visible, even at extreme high and low water levels.

The Yarway Indicator is manometric type with automatic temperature compensation, as approved for use under the ruling of A.S.M.E. Boiler Code Committee in Case #1155.

Described in Yarway Bulletin WG-1824.

● Engineers tell us Yarway Remote Liquid Level Indicators are the most dependable boiler insurance they can have.

Instant . . . accurate . . . brilliant . . . continuous readings of boiler water level are seen on the panel or wherever you wish in your plant. You know the readings are right because they are controlled by the boiler water itself . . . by the pressure differential between a constant head of water and the varying head in the boiler drum. *Indicating mechanism is never under pressure.*

Yarway Indicators may be equipped with a Yarway Control Unit that operates Remote Hi-Lo-Alarm signal lights or horns. For a 24-hour record of boiler water levels, use the Yarway Hi-Lo-Graph Recorder.

On the boiler drum itself you'll want Yarway Water Gages . . . and these "bright as a star" gage readings can now be televised with a Yarway—RCA Tele-vision chain.

From drum to panel and at all remote locations, Yarway equipment gives you the safest boiler protection you can buy . . . proved beyond doubt in thousands of power plants.

Write for the specific bulletins you want.

**YARNALL-WARING COMPANY**

*Home Office:*

116 Mermaid Avenue, Philadelphia 18, Pa.

*Southern Representative:*

ROGER A. MARTIN, Bona Allen Building, Atlanta 3, Ga.





# good boiler insurance!"



## YARWAY WATER GAGES

Flat glass, high pressure type shown, features new separated-design insert and Type "M" illumination that causes water level meniscus to "shine like a star". Described in Yarway Bulletin WG-1812.



## YARWAY REMOTE SIGNAL ALARMS

Lights or horns, operated by Control Unit on Yarway Indicator, give instant warning of any serious deviation from normal water level. Can be located anywhere in plant. Described in Yarway Bulletin WG-1824.



## YARWAY HI-LO-GRAPH RECORDER

Gives a continuous 24-hour record of liquid levels. Actuating mechanism is same as in Yarway Indicator. Used both for indicating and recording. Described in Yarway Bulletin WG-1830.



## YARWAY TELEVISION

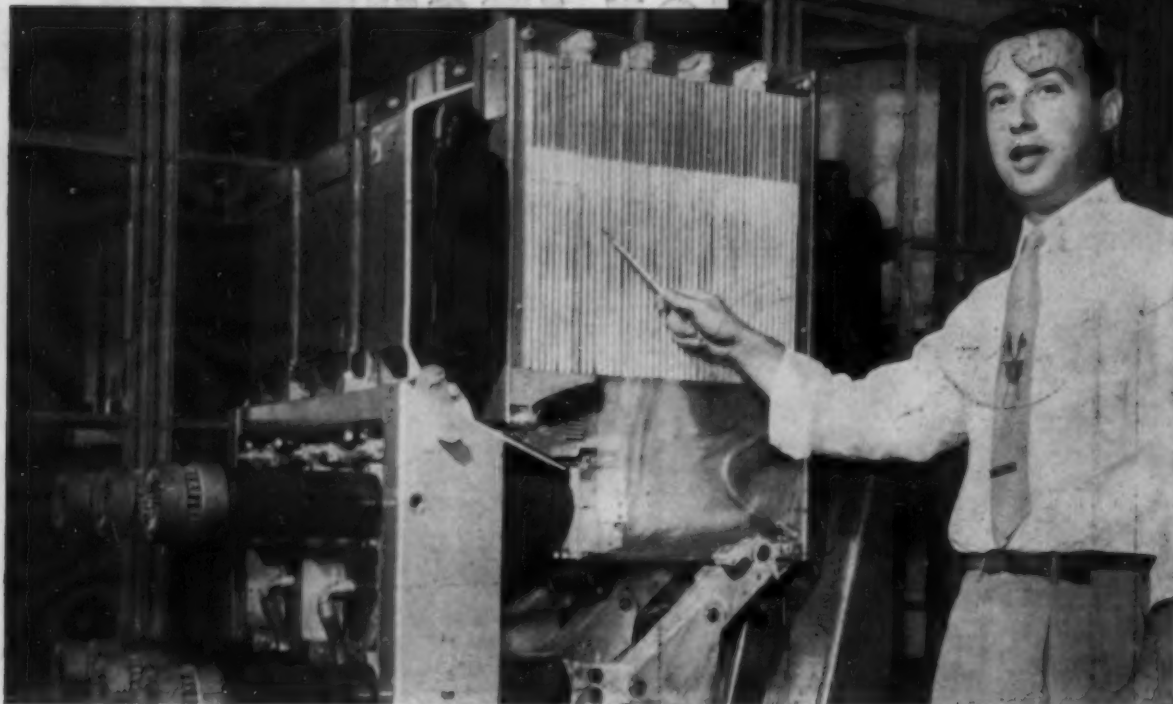
Simplified system consists of compact camera and panel-mounted monitor. Clear, bright image of water level in gage anywhere in plant. Described in Yarway Bulletin WG-1813.

# steam plant equipment

BLOW-OFF VALVES  
WATER COLUMNS AND GAGES  
LIQUID LEVEL INDICATORS  
EXPANSION JOINTS

STEAM TRAPS  
STRAINERS  
SPRAY NOZZLES  
DIGESTER VALVES

## News of electrical progress from I-T-E



**Torture path.** When the circuit breaker opens, powerful magnets quickly pull the arc upward into this maze of baffle plates, twisting it back and forth over a steadily lengthening path till it's smothered.

# I-T-E DESIGNS 9 FT. AIR TORTURE PATH TO SMOTHER 13,800 VOLT ARC



**Typical metal clad switchgear.** An installation such as this one will frequently be found where incoming power enters large industrial plants. More widespread use of 13.8 kv is part of today's trend toward higher voltages.

**Air circuit breaker interrupts short circuits in 1/10 sec.**

When a heavy short circuit at high voltage is ripped apart inside an I-T-E circuit breaker, the result is very much like lightning. A heavy arc surges through the air chamber—where it is stretched, cooled and extinguished.

Smothering high voltage arcs in air eliminates the twin hazards of fire and explosion that go with oil-immersed devices. The I-T-E air circuit breaker opens safely—preventing electrical overloads and faults from interrupting service on other circuits. I-T-E pioneered the development of the air circuit breaker.

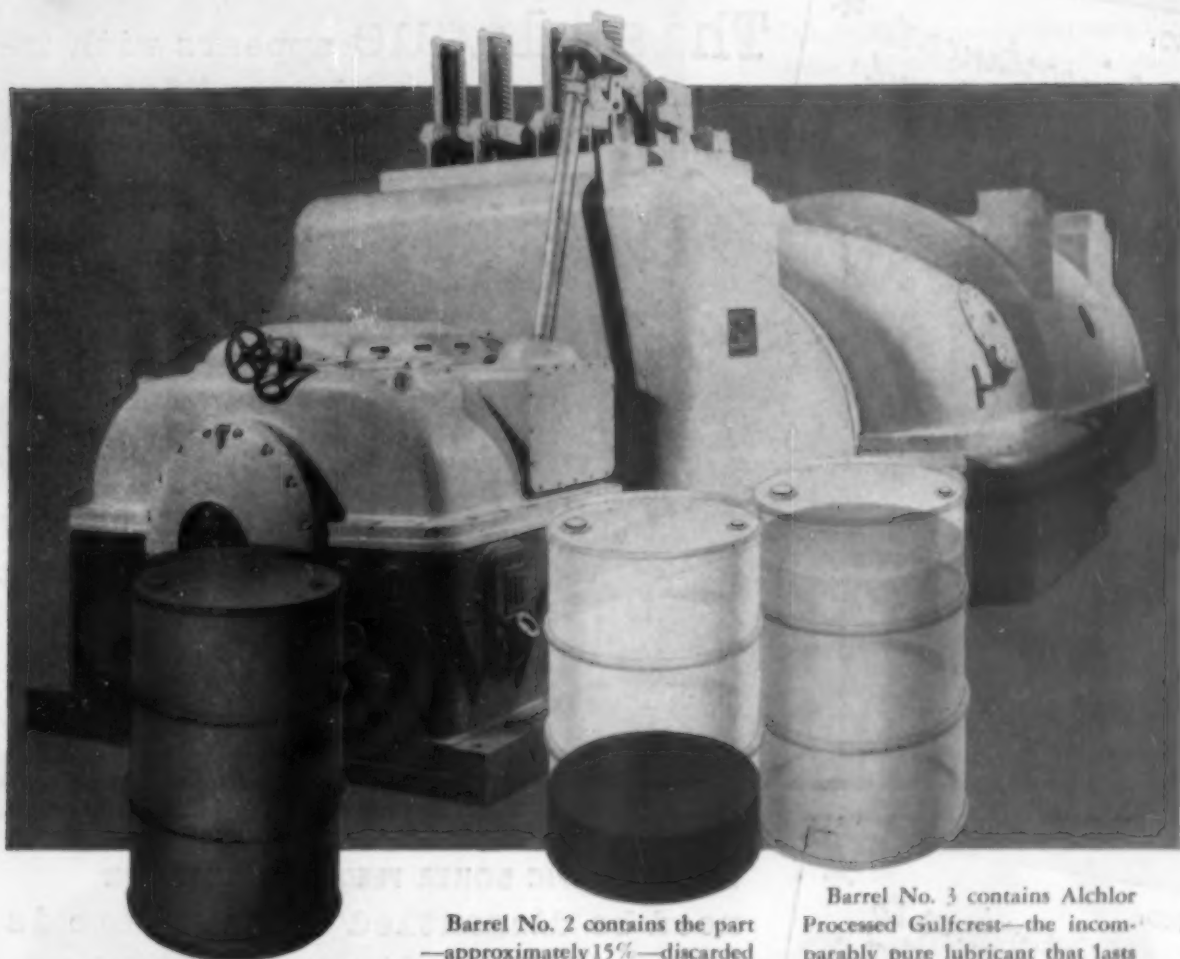
Today, every modern home, office, factory or other user of electrical power can have the convenience, safety and economy of I-T-E air circuit breaker protection.

Before you buy, build or design new construction, learn the advantages of I-T-E products. Write I-T-E Circuit Breaker Company, Phila. 30, Pa.



**I-T-E CIRCUIT BREAKER COMPANY, Philadelphia, Pa. • Greensburg, Pa. • Victor, N. Y.**  
Bulldog Electric Products Company, Detroit, Mich. • Bulldog Electric Products Company (Canada) Ltd., Toronto • Eastern Power Devices Ltd., Toronto, Canada

# **GULFCREST** is the only turbine oil that is super refined for superior performance by the **ALCHLOR PROCESS**



Barrel No. 1 contains a highly refined oil that will become Gulfcrest. It has gone through the usual steps used in refining other turbine oils—but has not yet been Alchlor Processed.

Barrel No. 2 contains the part—approximately 15%—discarded by the Alchlor Process. This discarded portion contains unstable hydrocarbons which, if allowed to remain in a turbine oil, are likely to oxidize, increase neutralization number, form sludge, emulsifiers, and harmful acids.

Barrel No. 3 contains Alchlor Processed Gulfcrest—the incomparably pure lubricant that lasts longer, gives superior performance and helps keep your turbine systems clean indefinitely. To make Gulfcrest even finer, special inhibitors are added to give it still greater stability and protect against corrosion and foaming.

Call your nearest Gulf office today and have a Gulf Sales Engineer recommend the proper grade of Gulfcrest Oil to meet the specific requirements of your turbines.



**GULF OIL CORPORATION • GULF REFINING COMPANY • 1822 Gulf Building, Pittsburgh 30, Pa.**

SOUTHERN POWER & INDUSTRY for OCTOBER, 1955

# Facts<sup>\*</sup> about

MEMO:

*- of importance to  
Mechanical and  
Financial  
Engineers*

This plaque appears with increasing frequency in the Listing of Principal Power Plant Equipment...



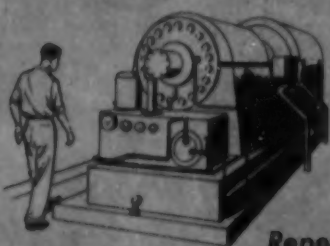
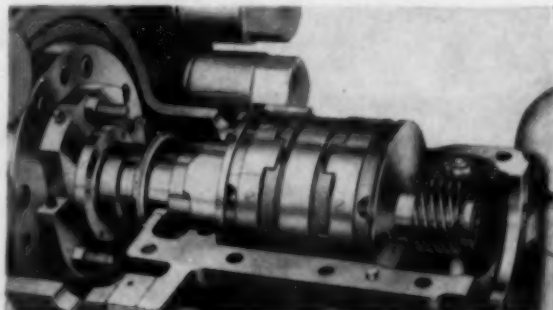
MEMO:

*- of importance to  
Operating and  
Maintenance  
Engineers*

Your PACIFIC BOILER FEED PUMPS never need be dismantled unless there is a drop in capacity or head...then maintenance is easy...and because it is easy, the cost is low!

## BEARINGS:

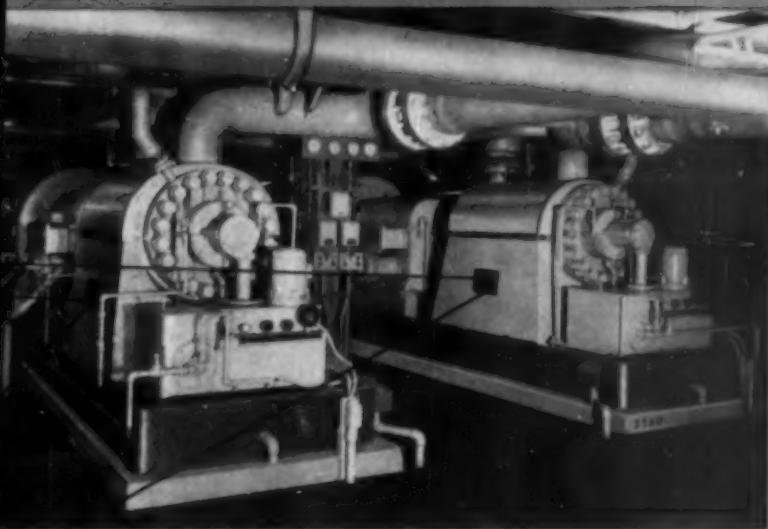
Can be inspected by simply removing the covers. Unitized internal assembly may be removed from the case and dismantled without heating the impellers or other parts.



Repeat orders from Utilities vary from 3 to 13 units—average 6 or more units!  
Absolute evidence of Pacific's superiority in Performance — Economy — Service!



# **PACIFIC** BOILER FEED PUMPS



because it meets the Industry's 3 basic requirements...  
There is no cost compromise in the  
Design, Workmanship, Materials in  
**PACIFIC HIGH-PRESSURE BOILER-FEED PUMPS**

● From 1950 to the present time more than 600 boiler feed pumps have been installed by Pacific for feedwater temperatures to 450° F ... capacities to one-million pounds-per-hour with discharge pressures to 2990 psig.

From the plain cylindrical case ... the unitized internal assembly ... the one, ring-type pressure joint ... the one, high pressure breakdown ... to bearings pressure lubricated with filtered, cooled oil, the design emphasizes simplicity with efficiency.

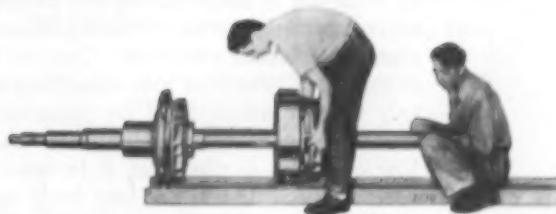
Precision workmanship is emphasized at every step from magniflux inspection of castings through boring ... turning ... grinding ... to dynamic balancing of rotating parts.

The chrome content of all parts fabricated from alloy steels is varied for depth hardening and resistance to corrosion-erosion.



## **MICROMETER CHECK-UP:**

The accuracy of all internal bores can be checked exactly...not by guess...easily and quickly because of Pacific's superior design.



## **UNITIZED INTERNAL ASSEMBLY:**

May be assembled by two men without the aid of a torch or other heating devices—thus eliminating shaft distortion due to uneven heating and cooling during assembly operation. There is no critical lateral adjustment of shaft after unitized internal assembly is installed in the case.

# **PACIFIC**

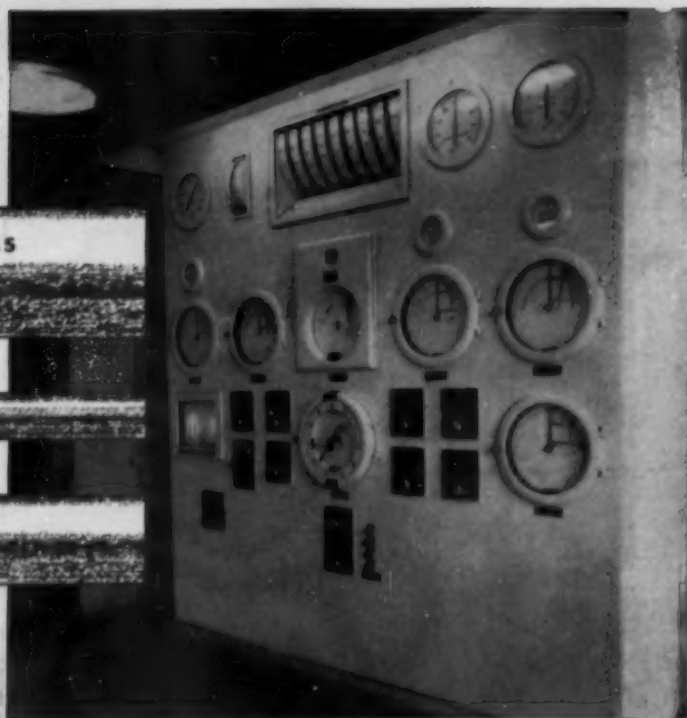
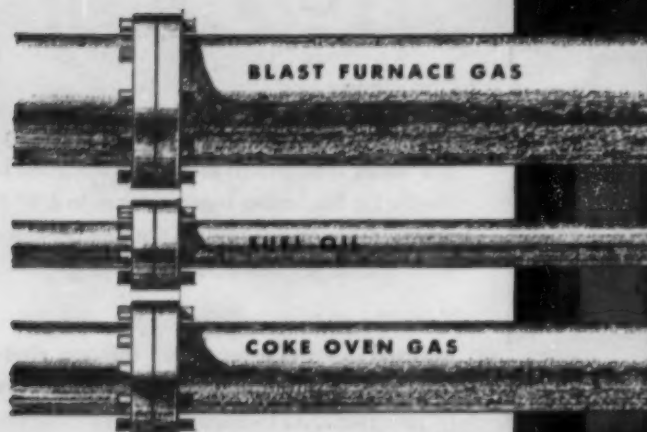
**PACIFIC PUMPS INC.**

HUNTINGTON PARK  
CALIFORNIA

Export Office: Chanin Bldg., 722 E. 42nd St., N.Y.  
Offices in all principal cities

87-21





## **This REPUBLIC COMBUSTION CONTROL SYSTEM**

### **Automatically Selects Lowest Cost Combination of Three Available Fuels**

Three fuels—blast furnace gas, coke oven gas, and fuel oil—are burned by three 125,000 lb. per hr. steam generating boilers at a large midwestern steel plant.

In addition to maintaining the proper fuel-air ratio and holding steam pressure constant at all loads, a Republic Control System automatically makes fuel selections according to the amount of by-product blast furnace gas available. At times when this low cost gas is plentiful, it is used as the primary fuel. The other two fuels are used only for make-up when available blast furnace gas cannot meet all of the fuel demand. If the blast furnace gas pressure falls below a predetermined minimum, however, flow

Boiler panel at steel mill power plant includes sub-panels and instruments for multi-fuel firing system. The boiler draft and fuel selection may be controlled manually from this panel, if desired.

is automatically reduced and one of the other two fuels also burned.

This dual purpose Combustion Control System cuts fuel costs two ways:

- (1) Because of efficient combustion, less fuel is used for a given steam output.
- (2) As much lowest cost fuel is used as possible.

Control Systems such as this one further illustrate how Republic engineers can design combustion controls that make the most of fuels available. Very likely, Republic can show you ways to get more power at less cost — automatically.

**REPUBLIC AUTOMATIC  
COMBUSTION CONTROLS**

- ★ For all types and sizes of boilers      ★ For all types of fuel
- ★ For all types of firing
- ★ For all arrangements of draft      ★ For all load conditions

# **REPUBLIC FLOW METERS CO.**

2240 Diversey Parkway, Chicago 47, Illinois

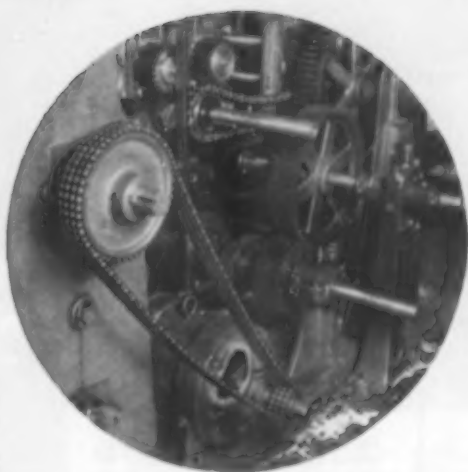
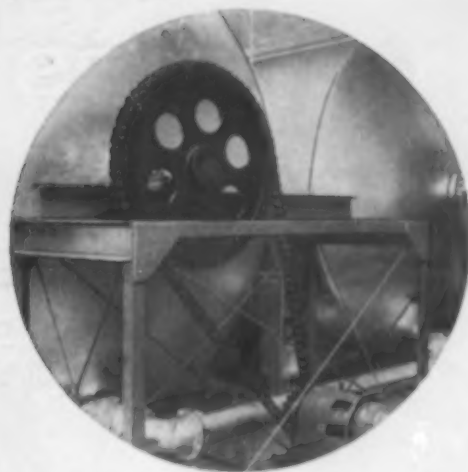
## DIAMOND ROLLER CHAIN DRIVES

*to keep  
your production  
UP!*

From motor to driven shaft, one shaft to another or several,—you will find smooth running, non-slipping Diamond Roller Chain in the pitch size, length, single or multiple strand—that will solve the problem, maintain 98-99 per cent efficiency and 100 per cent speed ratio.

Your production is maintained at the level desired, with no unnecessary time out for adjustments or frequent repairs... You can make greater use of Diamond Roller Chain now than you have in the past,—plenty of applications that will further improve your overall output economically.

Stock Roller Chains and Sprockets are carried by Diamond Distributors all over the country—for handy reference write for Stock Catalog 754.



### DIAMOND CHAIN COMPANY, Inc.

*Where High Quality is Traditional*

Dept. 612, 402 Kentucky Avenue, Indianapolis 7, Ind.

Offices and Distributors in All Principal Cities

Please refer to the classified section of your local telephone directory under the heading CHAINS or CHAINS-ROLLER

#### STOCK CHAINS & SPROCKETS



Write for Catalog 754  
Stock Roller Chains and  
Sprockets

#### CONTENTS INCLUDE:

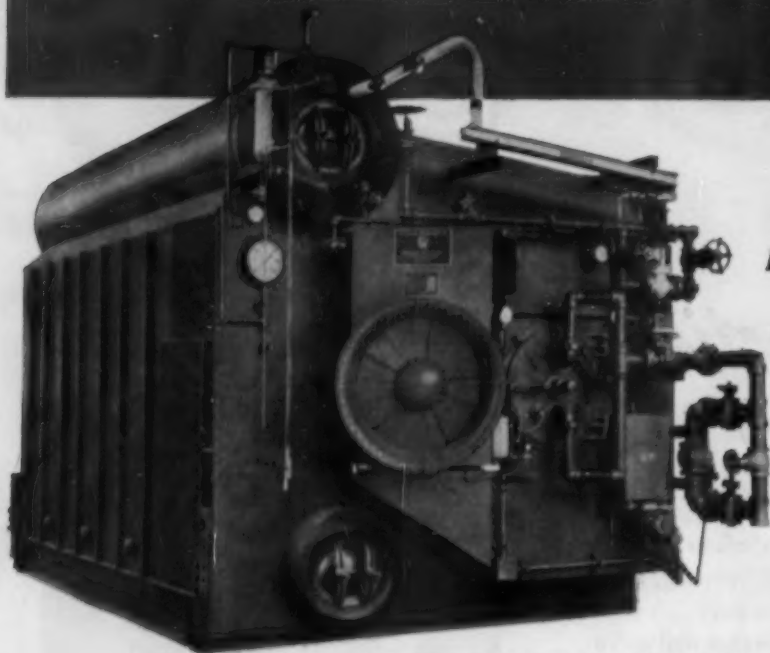
- How to select Stock Roller Chain Drives
- Ready-to-use chain length tables
- Table of speed ratios for sprocket combinations
- Sprocket selection tables for chains, all pitches
- Stainless Steel and Bronze chains

*The Roller Chain  
is DIAMOND*



# 15 YEARS EXPERIENCE

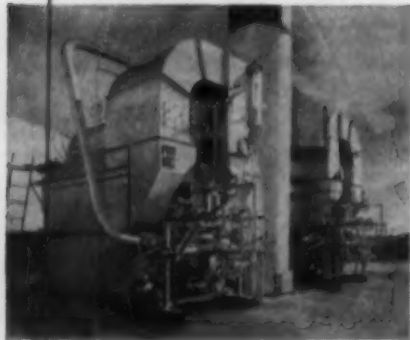
in packaged steam generators



*In 1940 the original water-tube packaged steam generators — two Foster Wheeler units — were installed for oil field drilling operations.*

New Foster Wheeler Series AG-100 Packaged Steam Generator.

Two FW packaged boilers—the first ever offered to industry—were installed in 1940 and are still in service delivering low-cost steam.



Now, with many successfully operating packaged units in service for processing, heating and generating, backed by 60 years experience in the power industry, Foster Wheeler offers the new "Series AG-100".

The new Series AG-100 shop-assembled water-tube steam generator is supplied for capacities from 10,000 to 46,000 lb steam per hour for oil or gas firing. It provides such significant advantages as baffled steam-collecting internals, the most efficient boiler surface arrangement, tangent furnace side wall and roof tubes which minimize refractory maintenance and provide cool operation, greater adaptability and accessibility.

For more detailed information, write for new catalog PG-55-3, Foster Wheeler Corporation, 165 Broadway, New York 6, New York.

## FOSTER WHEELER

NEW YORK • LONDON • PARIS • ST. CATHARINES, ONT.





## PROJECT SERVICES . . . SPEED STATION CONSTRUCTION



**NEW DELTA STATION**, 210,000-kw addition to MP&L's system, demonstrates progressive thinking by one of America's enterprising electric utilities.

# Mississippi Power & Light adds 210,000 kw to system with all G-E Delta steam plant

Helping to meet the unprecedented demand for electric power in the South, Mississippi Power & Light's new Delta steam-electric station is now supplying 210,000 kw. The new plant, largest ever built in Mississippi, reflects progressive thinking and advance system planning.

Electrical apparatus was supplied by General Electric, after selection by MP&L and Ebasco Services, the consulting engineers. A G-E project team, composed of Sales, Engineering, and Product specialists assigned to the project, gave valuable assistance in putting the station on the line.

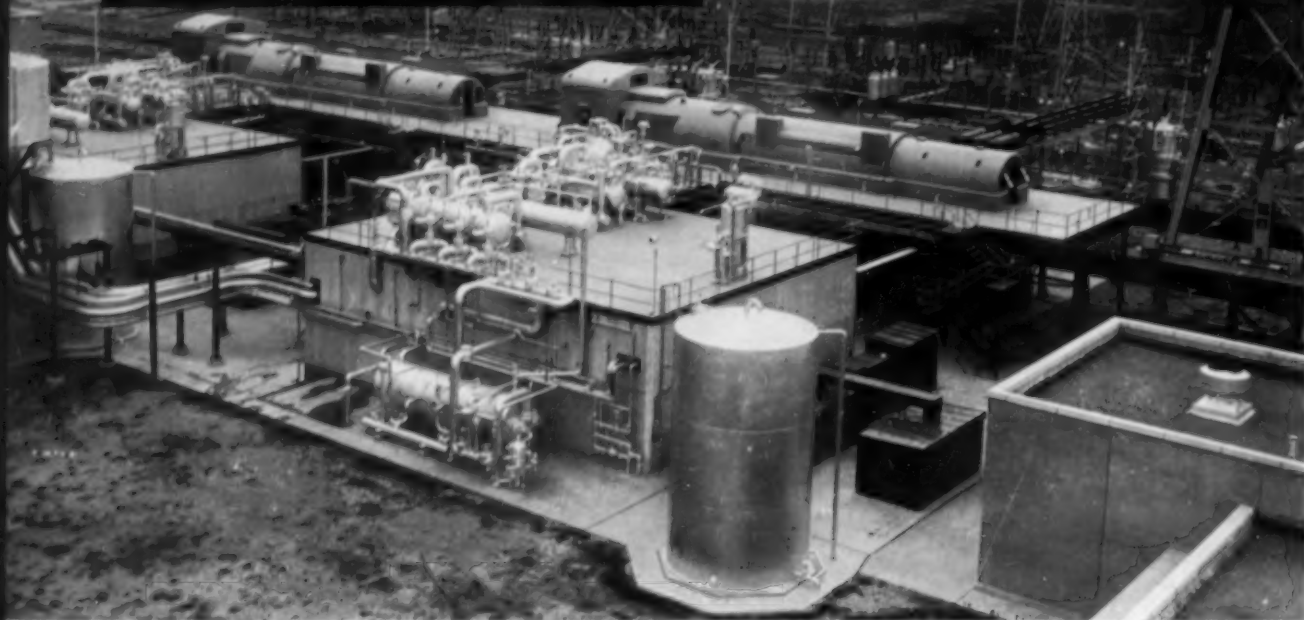
Efficient coordination of design, production and shipment of all electric apparatus by this G-E team proved a significant factor in helping Ebasco virtually eliminate overtime and keep the total cost to MP&L within budget levels.

**GENERAL  ELECTRIC**

**For More Station Data See Next Page ►**



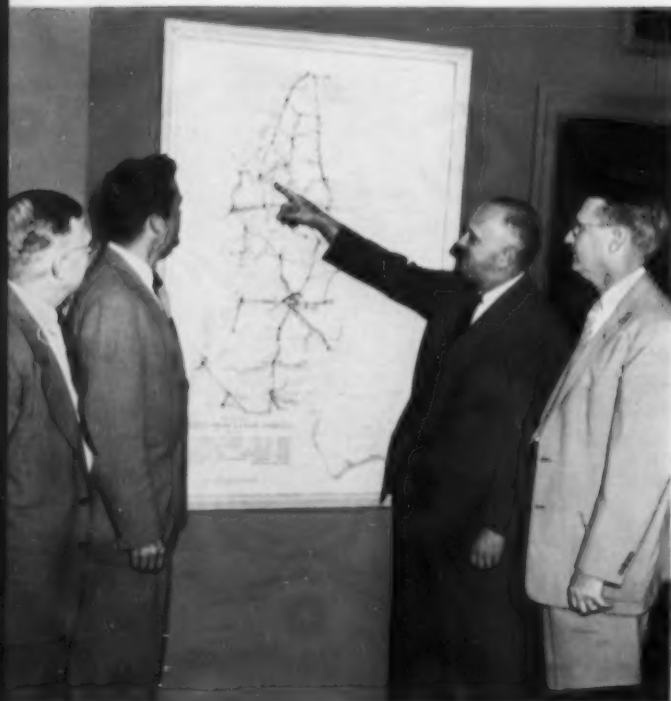
## PROJECT SERVICES REPORT



**ON THE LINE** ahead of schedule, two 105,000-kw General Electric turbine-generators at the new Delta plant are helping meet state's growing need for electric power. Careful planning from the

outset meant on-time manufacture, delivery, installation of all apparatus including the G.E.-equipped switchyard with power transformer and auxiliary power supply transformer shown here.

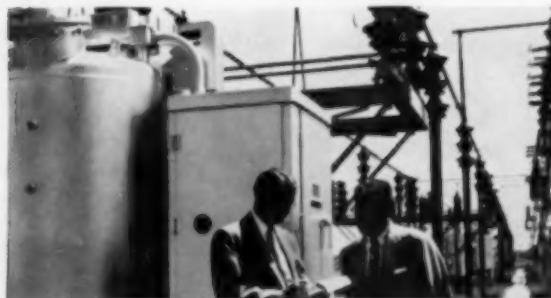
# G-E engineers team with Ebasco to meet



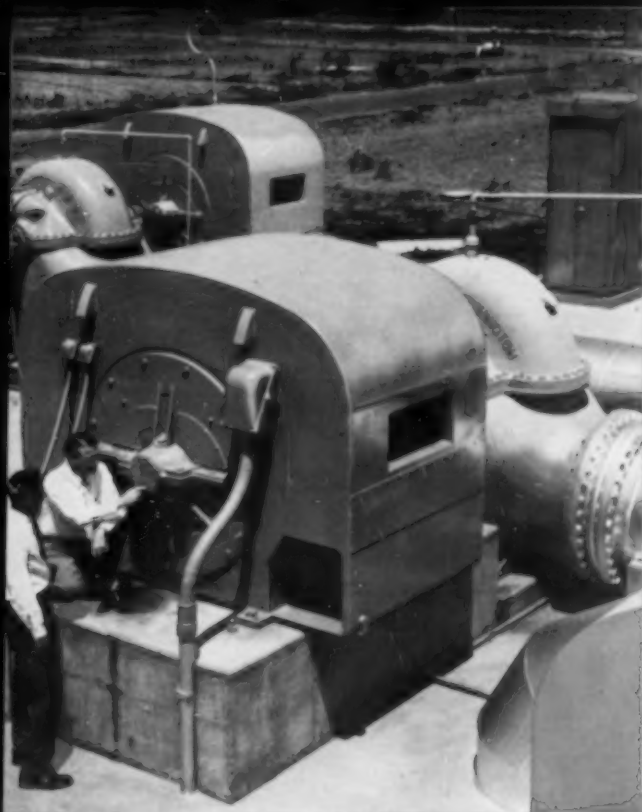
**LATEST THINKING** in station design highlights new Delta plant discussed here by (l to r) B. M. Davis, MP&L; R. H. Annin, G.E.; R. B. Wilson, MP&L President; T. R. Brock, G.E.



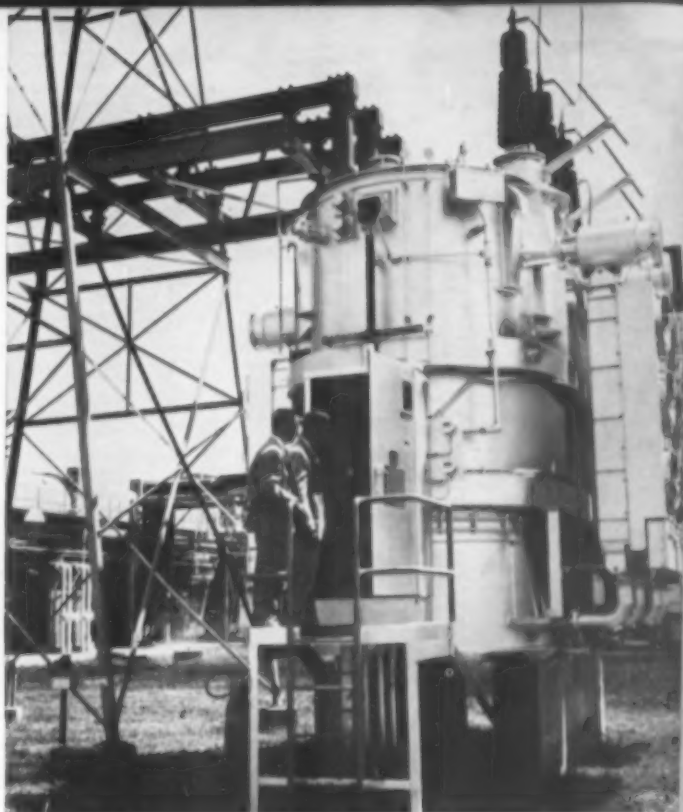
**WEATHER-PROTECTED UNIT SUBSTATION** with 480-volt duplex switchgear, which serves one of the two 105,000-kw turbine-generators, was designed to meet the needs of the Delta Station.



**COMPLETE SWITCHYARDS** including switchgear can be provided through G-E Project Services. T. R. Brock, G.E. and J. B. Fountain, MP&L discuss arrangement and design.



**ECONOMICAL CONSTRUCTION** of G-E weather-protected motors makes them excellent drives for these pumps. Here, design is checked by G.E.'s T. R. Brock and MP&L's D. C. Lutken.



**135,000-KVA G-E POWER TRANSFORMER** was shipped upright requiring field assembly of accessories only. Here, W. M. Prall, G.E., and J. B. Fountain, MP&L, inspect control accessories.

## slated start-up date for new MP&L station

**Application, design, manufacture, shipment of apparatus . . . all synchronized with plant's progress . . . eliminated costly delays**

When Mississippi Power & Light and its consulting engineers, Ebasco Services, specified General Electric equipment for the Delta Station, a well-organized G-E engineering team went into action. As a result, valuable assistance helped speed construction and get the plant in full-time operation.

Recognizing the importance of early engineering decisions, G.E. aided Ebasco in finalizing the design characteristics of each item of G-E electric apparatus. Based on these decisions, G-E engineers were able to schedule manufacture, coordinate shipment; and thus assure delivery at plant site precisely as needed. Further aid was given in supervision of equipment installation. This efficient teamwork helped place Mississippi's largest single industrial project in operation on schedule and helped keep the total cost within the scope of MP&L's sound financial planning.

Similar teamwork, combining the utility, its consulting engineer and the G-E team of sales engineer, product specialists, application engineers, order service co-ordinators, and

field service engineers can also save you time, money and man-hours. Here's how it's done:

**Simplify ordering of equipment**, purchased either directly, or through your consulting engineers, or through a machinery manufacturer.

**Conserve engineering time** by handling electrical details which frees you and your consulting engineer for other urgent problems.

**Integrate equipment design** to assure the maximum flexibility and effectiveness of plant operation.

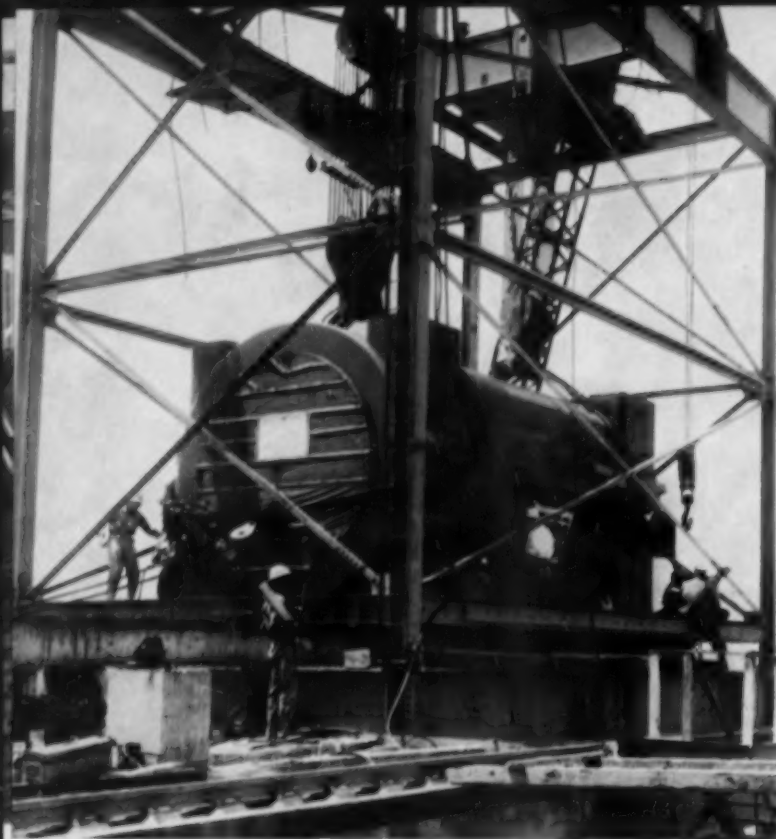
**Speed construction** by scheduling the arrival of equipment for maximum installation efficiency.

**Assist in installation and in training operators** to assure minimum start-up time and better understanding of the full operating capabilities of the equipment.

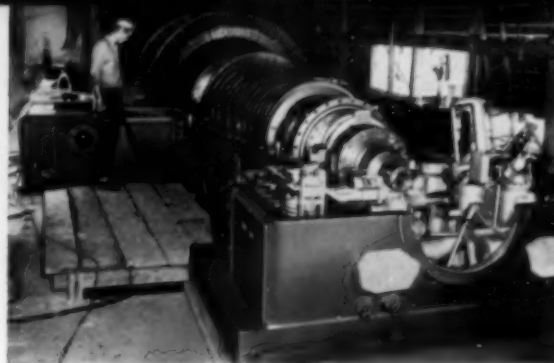
For details contact your G-E Apparatus Sales Representative, or write to Section 302-8, General Electric Company, Schenectady 5, N. Y.

**More Power to America**

**GENERAL**  **ELECTRIC**



**POSITIONING OF TURBINE-GENERATOR**, by the field service engineer assigned to your station, is one of many "follow-through" advantages gained through the use of General Electric Project Services.



**CAREFUL SUPERVISION** of installation of the rotor in this 105,000-kw G-E unit at the Delta Station was aided by a field service engineer member of a G-E Project team.



**CHECKING PERFORMANCE** on-the-line is a G-E field service engineer activity that you can obtain through Project Services.

Another "follow-through" of G-E Project Services . . .

## G-E field service engineers will supervise installation and start-up of your apparatus

When G-E equipment has reached your plant site, a G-E field service engineer is on the job to help oversee the placement, connection, and start-up of your apparatus investment. As a result, all the individual components of your new station or expanded plant are closely integrated with your over-all system for the best possible operation—as the G-E application engineer intended.

Field Service Engineering is just one of many Project Services on your job when you or your consultant specified G-E equipment. You can take advantage of all these services with G.E.:

**Application engineering** helps assure that all the

items of electrical equipment are coordinated in design and operation.

**Product development** means you get equipment that incorporates latest design features.

**Field service engineering** means supervised installation, planned start-up, proper operation of equipment.

**Service engineering** helps keep plant operating at full capability, means training of operators, setting up of maintenance programs.

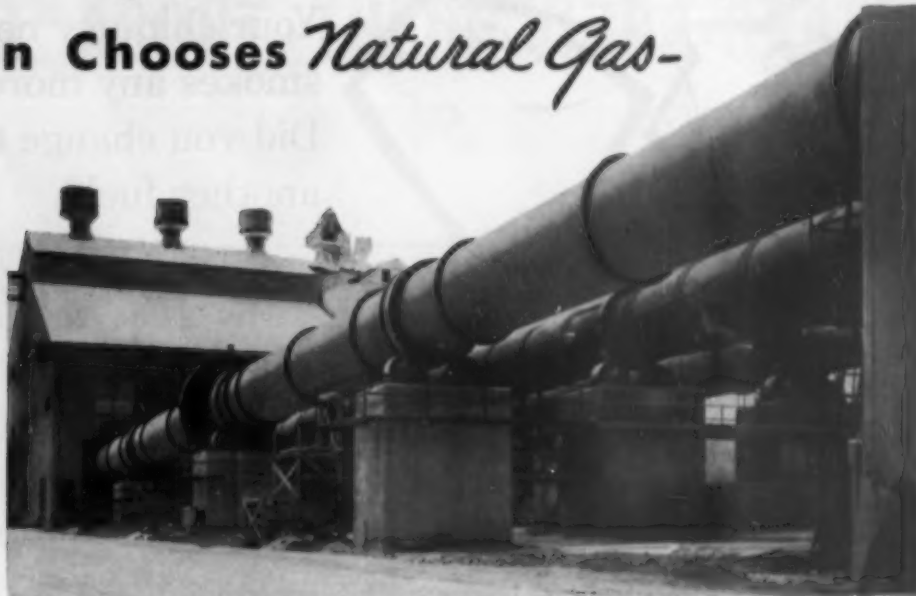
**Project coordination** helps assure proper selection, design, manufacture, delivery of your equipment without costly delays at installation time.

*More Power to America*

**GENERAL**  **ELECTRIC**



## Expanding Southern Cement Company Again Chooses *Natural Gas*-



Nearest the camera is the new rotary kiln at Southern Cement Company's Roberta, Alabama, plant



A new raw material storage building goes up next to the section of the plant which usually produces cement.

In 1950, the Southern Cement Company of Birmingham expanded its operations with a modern one-kiln lime plant at Roberta (Shelby County), Alabama. To fire the kiln, Natural Gas was chosen for its operating efficiency and for its "better success from a chemical standpoint."

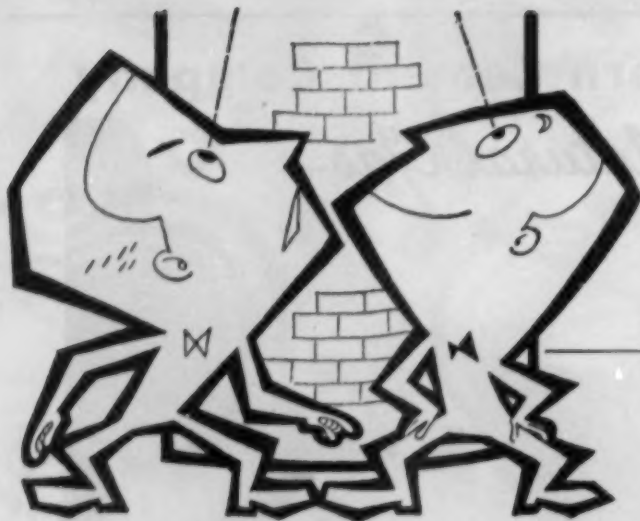
A fifth rotary kiln has just gone into service in the Roberta plant's third expansion. Southern Cement Company

now produces both lime and cement at Roberta in an unusually flexible operation. Three of the five kilns can produce either cement or lime. *And of course all are fueled with Natural Gas.*

Among Southern Cement's best known products are Magnolia Mason's Mix, Magnolia Stainless Cement and various types of Magnolia Lime.

**SOUTHERN NATURAL GAS**  
**COMPANY**  
*Serving the Growing South*

WATTS BUILDING • BIRMINGHAM, ALA.



Your chimney never  
smokes any more.  
Did you change to  
another fuel?

We just changed to another kind of coal. And  
man! Does it make a difference! No smoke. No  
clinkers. No trouble. And very few ashes.



What kind of  
magic coal is this?

It's one of the superior quality coals produced  
on the Chesapeake and Ohio. But the important  
thing is that it is exactly right for our type  
of installation.



Say, I've got to look into  
this! We're always  
having boiler room  
trouble at our plant.

Picking the right coal is a job for an expert.  
I never realized there were so many things to  
consider. Size, moisture, sulphur, ash softening  
temperature, etc., as well as BTU's.

Why don't you write to the C&O coal people?  
Tell them your problem and describe your boiler  
equipment. They'll help you find the very best  
coal for your particular condition.



There's a lot more to buying coal than  
the cost per ton. Why not contact coal  
producers on the C&O to solve your  
particular fuel requirements, or write to:  
R. C. Riedinger, General Coal Traffic  
Manager, Chesapeake and Ohio Rail-  
way Company, Terminal Tower, Cleve-  
land 1, Ohio.

**Chesapeake and Ohio Railway**

WORLD'S LARGEST CARRIER



OF BITUMINOUS COAL

# MAKERS OF JOHNSON WAX PRODUCTS TELL ABOUT THEIR VIBRA-GRATE



Administration and Research Center, S. C. Johnson & Son, Inc., Racine, Wisconsin. In the foreground is a giant plastic globe which serves as a directory of the company's world-wide operations.

TWO YEARS AGO, S. C. Johnson & Son, Inc. was in the market for a stoker for their Racine plant. Impressed by the advantages of the Vibra-Grate (which AE had been licensed to build in U.S. and Canada) Johnson engaged a German consulting engineer to investigate a number of European installations. These included Vibra-Grates in service since 1947, and earlier models dating back to 1939. Johnson instructed American to proceed with the work immediately, subject to the engineer's report which, when received, confirmed Johnson's decision. Their comments after the unit had carried the plant load to May, 1955, will interest everyone seeking maximum stoker efficiency and economy.

"We put our Vibra-Grate Stoker in service in October 1954 and it has frequently carried loads

of 45,000# steam per hour, its rated peak capacity, and has often operated at loads of 10,000 to 15,000# per hour.

"We have found no objectionable fly ash at any rating and tests have shown that the quantity of solids entering the stack is far below those specified in the ASME Smoke Regulation Ordinance and our local codes. The Vibra-Grate was installed without a dust collector and it is obvious that no collector is needed.

"Comparison of the operating efficiency of the Vibra-Grate with that of our former stoker is very much in favor of the Vibra-Grate. Need for maintenance has been at an absolute minimum."

AE Vibra-Grate Stoker (completely water-cooled) brings a combination of advantages never before approached in stoker history. Nearly 100 Vibra-Grates are now in operation in Europe, the Middle East and the U.S. If you are shooting for the last word in stoker efficiency, write us for full information.



## AMERICAN ENGINEERING

COMPANY

PHILADELPHIA 25, PENNA.



Affiliated Engineering Corporations, Ltd., Montreal 16, P. Q., Bowden Industries Ltd., Toronto 3, Ont.

AE Products are: Marine Deck Auxiliaries, Hole Saw and Hydraulic Fluid Power, L. H. H. Motors, L. H. H. Oil Pumps, Taylor, Perfect Sinter and Vibra-Grate Stokers.



**FOUR INTERLOCKED CRANES** handle 100-foot long trusses in structural plant. Cranes are 5 tons capacity, 3-runway, 36 and 40 feet long. They operate individually or together as

units. Trusses are removed from jig and advanced to next location within a few minutes by two men operating crane control buttons.

# TRAMRAIL IDEAS THAT



**TRACK AND CRANE SYSTEM** speeds automobile body fabrication. Tramrail cranes support spot-welding equipment and move assembled bodies between departments. Up to 105 bodies are produced per 8-hour day in this particular work area.

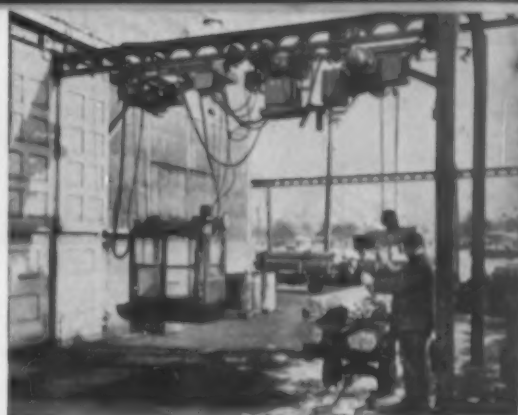


**MOTORIZED GANTRY CRANE** with spreader beam provides efficient handling in local area for bundles of tubing. Gantries can be hand-propelled, or partly electrified, or completely motorized like one illustrated.





**EFFICIENT CRANE COVERAGE** reduces time loss of skilled workers and expensive machine tools. Hand-propelled Tramrail cranes with electric hoists are an important factor in maintaining a profitable operation in this type of shop.



**RAISE-LOWER CAB CARRIER** permits operator leaving cab at any point to attach hooks to materials to be transported. Floor help is unnecessary and costs are consequently held at a minimum. This unit operates both outside and inside of the building.



**HAND PROPELLED CRANE** with one-ton chain hoist provides overhead conveying and hoisting service at low cost. Operation is smooth and easy, with practically no maintenance.

# CUT COSTS...

**Whatever your handling needs, most likely versatile Cleveland Tramrail can be adapted to solve them.**

In nearly every segment of industry, various forms of Cleveland Tramrail equipment are being used to advantage. In fact, over 40,000 installations are serving 9,000 companies.

The equipment speeds production, saves floor space, improves safety, reduces floor congestion — and cuts costs tremendously.

Cleveland Tramrail consists of track, switches, carriers, hoists, grabs, etc., which can be combined in a thousand-fold ways to exactly suit your need. Illustrated here are a few random examples of how the equipment is being used. Cleveland Tramrail can be furnished for simple manual operation or with any degree of electrification, including fully automated systems.

A local Cleveland Tramrail sales engineer will be glad to discuss overhead materials handling with you and show you installations at work in nearby plants. Why not get in touch with him? A card or letter to us will do the trick.



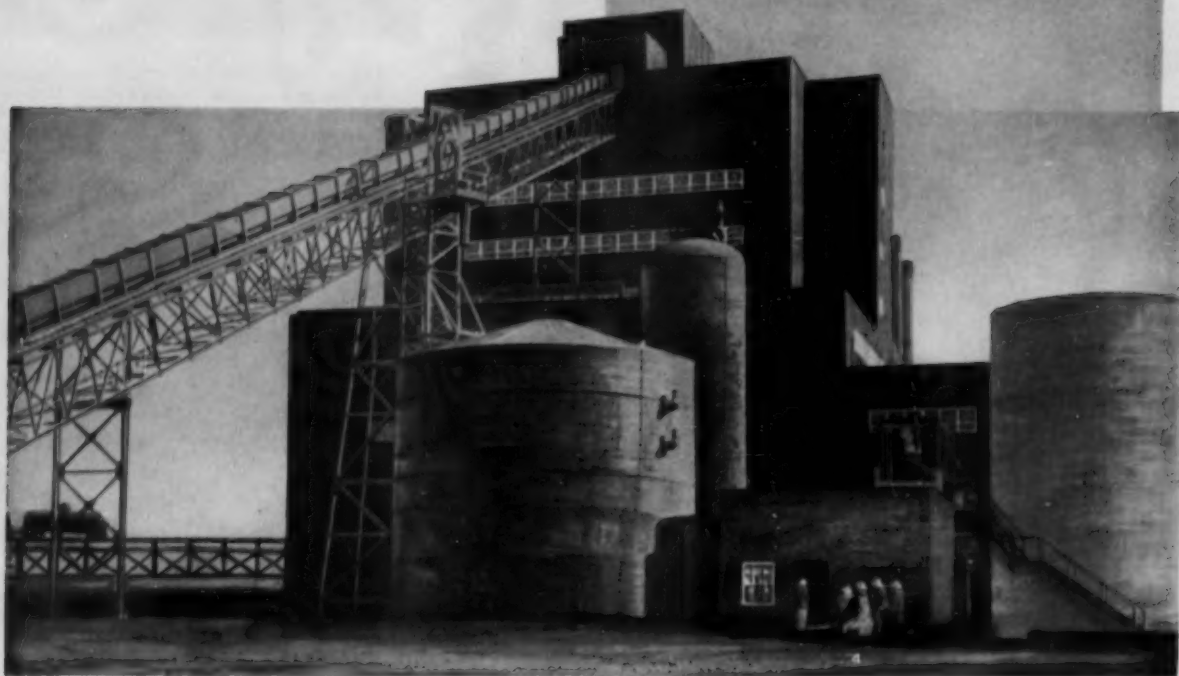
This large book is the greatest in its field. Contains a wealth of valuable information. Covers details of 143 outstanding installations. Has 426 large photos, 59 system layouts, 69 other sketches. Write for your free copy of "Cleveland Tramrail at Work" on your company letterhead. A nearby representative will deliver it without obligation.



**THREE-WAY TRACK SWITCH** enables this tractor-driven 5-ton electric hoist carrier to travel to various parts of a plant. This is another example of the many handling arrangements possible with Cleveland Tramrail.

**CLEVELAND TRAMRAIL DIVISION**  
**THE CLEVELAND CRANE & ENGINEERING CO.**  
 7404 EAST 290th STREET WICKLIFFE, OHIO

# NEW PROCESS FOR PULPING HARDWOODS



In Maine's northern Penobscot region, hardwoods are available for paper pulp in plentiful supply.

When Great Northern Paper Company expanded its mill at East Millinocket, Stone & Webster Engineering Corporation was engaged to engineer and design the Company's almost completely automatic Chemi-Groundwood Pulp Mill—the first large commercial chemical plant of its type for removing the resins and lignins in hardwood.

Utilizing information obtained from the client's pilot plant operation, the Chemi-Groundwood Pulp Mill employs pioneer developments and radical departures from accepted practice in the pulp and paper industry.

At Great Northern Paper Company's new Chemi-Groundwood Pulp Mill, hardwood logs are loaded automatically into digesters, cooked in recirculating liquor, dropped into water pools for cooling, leaching and storage, conveyed through a stream barker and thence to grinder. The self-contained mill has its own cooking liquor preparation plant, chemical handling and storage facilities.



## STONE & WEBSTER ENGINEERING CORPORATION

A SUBSIDIARY of STONE & WEBSTER, INC.

New York Boston Chicago Pittsburgh Houston San Francisco Los Angeles Seattle Toronto



Two Goulds 2 x 3-9 Fig. 3305 two-stage centrifugal pumps on boiler feed service. These pumps are available in five sizes, with capacities to 1200 GPM, heads to 1000 ft.

## These new pumps are designed to cut power plant maintenance costs

Eight special features, designed to insure maximum efficiency and long life, are standard in these new Goulds Fig. 3305 two-stage centrifugal pumps.

When you specify these pumps you get, *without extra cost*:

1. Renewable stuffing box bushings.
2. Bearing housings sealed against moisture and dirt.
3. Cowl-type glands suitable for use with quenching liquids.
4. Stainless steel impeller keys.
5. Teflon water-seal rings.
6. Die-formed stuffing box packing.
7. Corrosion-resistant gland bolts.
8. Unique labyrinth diaphragm which maintains thrust balance.

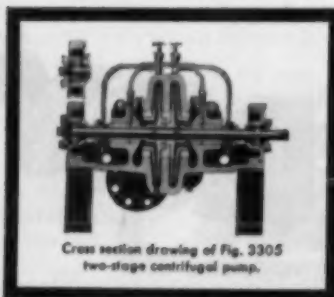
Every one of these features means less maintenance expense for you—less down time of vital equipment in your plant.

And that's not all, for the Fig. 3305 pump offers several other advantages,

too. For example, you can choose either a conventional stuffing box or a mechanical seal, to suit your requirements, and you can change from one to the other at any time. Also, the exclusive Goulds patented locking shaft sleeve permits you to change the direction of rotation in the field, without additional parts.

Furthermore, if you use a number of pumps in your plant, the extensive standardization of parts enables you to keep your parts inventory low. Not only are many of the parts interchangeable within the various five sizes of the Fig. 3305 pump, but many parts also are interchangeable with those of the Goulds Fig. 3405 single-stage, double-suction pump.

Send the coupon below for Bulletin 722.6, which gives the complete story of the Fig. 3305 advantages, including specifications, performance curves, and interchangeability charts.



Cross section drawing of Fig. 3305 two-stage centrifugal pump.

GOULDS PUMPS, INC., Dept. SPI-10  
Seneca Falls, N. Y.

Please send me Bulletin 722.6 giving details and specifications of Fig. 3305 two-stage centrifugal pumps. I understand that this places me under no obligation.

Name \_\_\_\_\_ Title \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

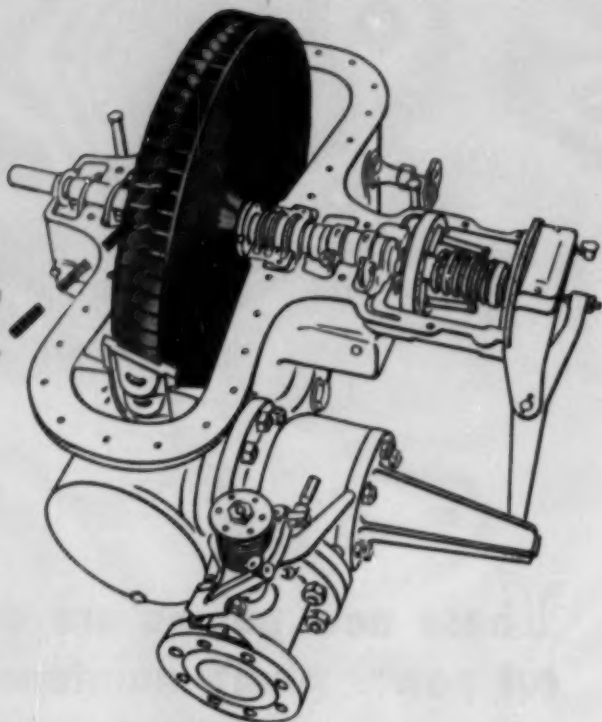
City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

**Goulds** PUMPS INC.  
Seneca Falls, New York

Atlanta • Boston • Chicago • Houston • New York  
Philadelphia • Pittsburgh • Tulsa



## TERRY SOLID WHEEL



### ...“trade mark” of a trouble-free turbine

This is the rotor of a Terry solid-wheel turbine. There are a number of reasons why it has become a symbol for reliable, trouble-free operation.

**First**, because the wheel is a single forging, in which a series of semi-circular buckets is milled, there are no separate parts to become loose or work out.

**Second**, because the power-producing action of the steam takes place on the curved surfaces at the back of the buckets, blade wear is of little consequence. Wear does not materi-

ally affect horsepower or efficiency.

**Third**, because the steam enters the buckets in a direction at right angles to the shaft, there is no need for close axial blade clearances. The blades cannot foul. There is a one inch clearance on either side of the wheel. In addition, the blades are double rim protected.

These are only a few of the reasons why the Terry solid wheel has become a “Trade Mark” for trouble-free turbine performance. For complete details, send for a copy of bulletin S-116. No cost or obligation.

THE TERRY STEAM TURBINE CO.  
TERRY SQUARE, HARTFORD 1, CONN.

# TERRY

TT-1197



# NOW

... a new

universal pipe

and block insulation

for all temperatures

from 100° to 1600° F.

# CAREY ALLTEMP

**USES**—ALLTEMP is recommended for insulating high temperature surfaces such as oil stills, boiler walls, breechings, furnaces and other equipment where surfaces to be insulated reach 1600° F.

Now, answer *all* your insulation problems with a completely new pipe and block insulation—Carey ALLTEMP! Eight years of development went into its making. New performance records were set during exhaustive field and laboratory tests. Here it is—a brand-new industrial insulation for all temperatures up to 1600° F.

ALLTEMP keeps every last BTU on the job producing power. Its extremely low percentage of shrinkage—approximately  $\frac{1}{2}\%$  less than other 1200° F. insulation materials—means joints won't open, cracks won't appear in covering. BTU's are *locked in!* ALLTEMP retains its high thermal efficiency and structural strength even after long, continuous exposure to excessive heat and moisture. Non-brittle, it resists blows, abrasions; won't crack or crumble under severe service conditions. And it's easy on the hands—easy to cut, fit, install!

Get all the cost-saving facts on new ALLTEMP today and your copy of the Carey ALLTEMP specification folder.

Just address coupon below.

#### ALLTEMP RECOMMENDED THICKNESS

Nominal Pipe Size Inches	Temperature Difference "F 80" Air					
	200	400	600	800	1000	1200
Nominal Thickness, Inches						
1½ & Under	1	1	1½	2	2½	3
2	1	1½	2	2½	3	3½
2½	1	1½	2	2½	3	3½
3	1	1½	2	2½	3	3½
3½	1	1½	2	2½	3	3½
4	1	1½	2	2½	3	3½
4½	1½	2	2½	3	3½	4
5	1½	2	2½	3	3½	4
6	1½	2	2½	3½	4	4½
7	1½	2	2½	3½	4	4½
8	1½	2	3	3½	4	4½
9	1½	2	3	3½	4½	5
10	1½	2½	3	4	4½	5
11	1½	2½	3	4	4½	5
12	1½	2½	3	4	4½	5
14 & Over	1½	2½	3½	4	4½	5½

ALLTEMP is available in clean, easy-to-handle flat and preformed blocks. "Nesting" O.D. pipe covering sizes provide accurate, tight fits for multiple layer construction. Only a limited number of "prime" units are necessary for un-  
usual assemblies.

Better Products for Industry Since 1873

## Carey

THE PHILIP CAREY MFG. COMPANY

Lockland, Cincinnati 15, Ohio

In Canada: The Philip Carey Co., Ltd., Montreal 3, P.Q.

Carey-approved contract units in major trading areas. Consult your nearest Carey District Office or your Telephone directory.

FREE FOLDER



THE PHILIP CAREY MFG. COMPANY  
Lockland, Cincinnati 15, Ohio • Dept. SPI-10

Please send free illustrated folder showing specifications, installation details and complete facts on new ALLTEMP insulation.

☐ Have your Industrial Sales Engineer call without obligation.

NAME \_\_\_\_\_

COMPANY \_\_\_\_\_

ADDRESS \_\_\_\_\_

CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

Coal, like clothes, must be  
**Superwashed clean!**



That's why Bell & Zoller coals from five\* great coal-producing states, are free from impurities that would impair their burning qualities.

Skillfully mined under modern conditions, scientifically processed to assure uniform dependability, then *super-washed* clean—these premium quality coals meet the exacting needs for every type of domestic and in-

dustrial user; result in a free-burning, high heat-producing fuel that keeps boiler efficiency up—steam costs down.

For a complete survey of your present equipment and an analysis of your requirements, contact a Bell & Zoller combustion engineer today. No cost or obligation, of course.

\*Illinois, Indiana, West Virginia, Pennsylvania and Western Kentucky

## BELL & ZOLLER COAL COMPANY

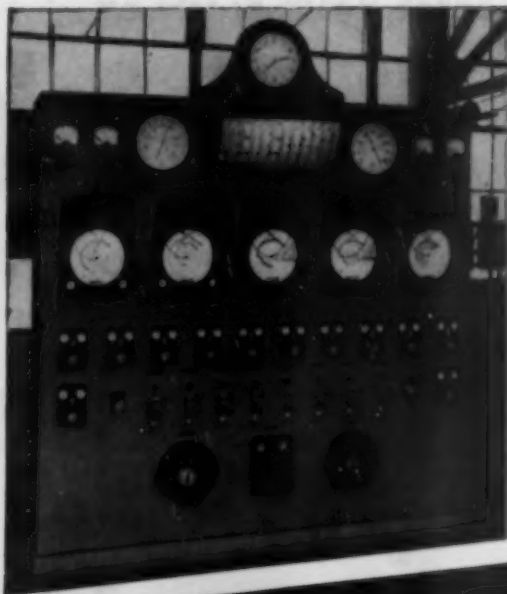
BELL BUILDING, CHICAGO 1, ILLINOIS

CLEVELAND • NEW YORK • ST. LOUIS • MINNEAPOLIS • OMAHA • MILWAUKEE  
LOUISVILLE • WASHINGTON, D. C. • TERRE HAUTE, IND. • MOUNT HOPE, W. VA.

*Sixty-Nine Years of Service to Coal Users*

Producers of ZEIGLER, MOSS HILL, ORIOLE, MURDOCK, BUCKHORN and SPARTA Coals

Sales Agents for:  
Boone County Coal Corporation  
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Mount Hope, West Virginia  
Mount Hope Coal Company  
Mount Hope, West Virginia  
Sterling Smokeless Coal Co.  
Mount Hope, West Virginia  
Tri-K Mining Company  
Terre Haute, Indiana



This Bailey Boiler Control Panel in a mid-western industrial plant saves fuel and insures safe operation of a 100,000 lb per hr, 175 psi, sat., pulverized coal and gas-fired boiler.

## What's Your Control-Dollar Efficiency?

Control-dollars frequently bring annual investment returns of 100% or more. When you buy adequate, well-applied steam plant controls, you increase your dollars' ability to work usefully for you.

That's where Bailey can help: Bailey Controls can give you a better control-dollar efficiency. Here's why:

1. **Complete Range of Equipment—fully co-ordinated.** You need never worry that a Bailey Engineer's recommendation is slanted in favor of a particular type of equipment, just because he has a limited line to sell—or that Bailey will pass the buck for efficient control; we offer *complete* boiler control systems.
2. **Engineering Service—backed by experience.** No other manufacturer of instruments and controls can offer as broad an experience, based on successful installations involving all types of combustion, flow measurement and automatic control.
3. **Direct Sales-Service—conveniently located near you.** Bailey Meter Company's sales-service engineers are located in more

industrial centers than those of any other manufacturer of boiler control systems; you get prompt, experienced service with a minimum of travel time and expense.

For better control-dollar efficiency—for more power per fuel dollar, less outage and safer working conditions, you owe it to yourself to investigate Bailey Controls. Ask a Bailey Engineer to arrange a visit to a nearby Bailey installation. We're proud to stand on our record: "More power to you!"

A-112-1

**BAILEY  
METER  
COMPANY**



1028 IVANHOE ROAD  
CLEVELAND 10, OHIO

*Controls*

*for Steam Plants*  
COMBUSTION • FEED WATER  
TEMPERATURE • PRESSURE  
LIQUID LEVEL • FEED PUMPS

SAVE MONEY AND PROTECT YOUR PLANT BY

# Installing Hancock 1500# and 2500# Steel Valves and assuring dependable leak-proof service

Put an end to the costly hazards of valve leakage in your high-pressure, high-temperature steam plant! Let proved-in-the-line Hancock 1500# and 2500# Valves assure the safe, reliable performance so essential to protect personnel, plant and service to customers.

Hancock 1500# and 2500# Steel Valves are preferred by most design and operating engineers in modern steam plants for very practical reasons. There is no bonnet joint to leak, no gasket to leak, no seat insert to leak! In fact, these rugged valves have every design, quality and construction feature essential for the severest services. Get complete information, then try one of these heavy-duty valves. You will soon agree that . . .

**When Hancocks go in, valve costs go down!**

#### SIZES:

¼" through 2"  
Outside Screw  
and Yoke

#### SERVICE RATINGS:

**Screwed and Socket**

**Weld Ends:** For all pressures up to 2500 psi at 1050° F., O.W.G. 6000 psi—100° F.

**Flanged Ends:**

For all pressures up to 1500 psi at 900° F., O.W.G. 3600 psi—100° F.



**YOUR INDUSTRIAL SUPPLY DISTRIBUTOR** is as close as your telephone. You can depend on his recommendations and service to save you time, trouble and expense.

**In Canada:** Manning, Maxwell & Moore of Canada Ltd., Galt, Ontario

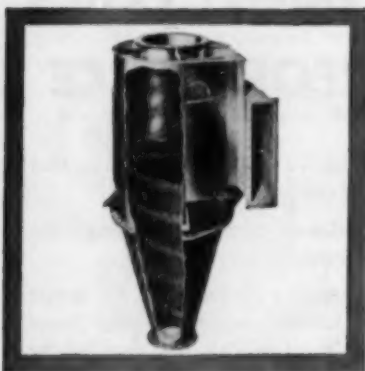
## HANCOCK VALVES

A product of **MANNING, MAXWELL & MOORE, INC.** Watertown 72, Massachusetts

MAKERS OF 'AMERICAN' INDUSTRIAL INSTRUMENTS, 'ASHCROFT' GAUGES, 'CONSOLIDATED' SAFETY AND RELIEF VALVES, 'AMERICAN-MICROSEN' INDUSTRIAL ELECTRONIC INSTRUMENTS, Stratford, Conn. 'CONSOLIDATED' SAFETY RELIEF VALVES, Tulsa, Okla. AIRCRAFT CONTROL PRODUCTS, Danbury, Conn. and Inglewood, Calif. "SHAW-BOX" AND 'LOAD LIFTER' CRANES, 'BUDGIT' AND 'LOAD LIFTER' HOISTS AND OTHER LIFTING SPECIALTIES, Muskegon, Mich.

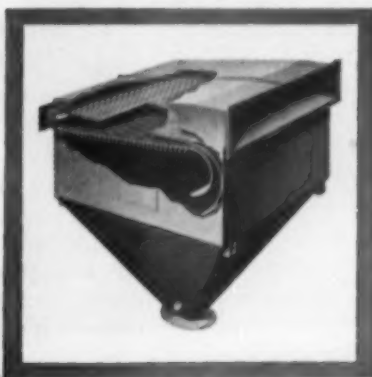


# Electrode Breakage Is no problem In Buell "SF" Electric Precipitators



Buell Cyclones offer two "extra-efficiency" advantages: (1) exclusive shave-off which harnesses double-eddy and puts it to work, and (2), large diameter design which eliminates clogging.

Besides eliminating efficiency drops and "shutdowns" due to electrode breakage, Buell's unique Spiralectrode permits higher and more constant emission, extra efficiency. Also, Continuous Cycle Rapping—another Buell exclusive—keeps electrodes constantly clean for maximum performance!



Buell's Low Resistance Fly Ash Collector combines top efficiency with low draft loss, for natural or forced draft installations. Ideal for boilers from 100 to 2000 BHP.

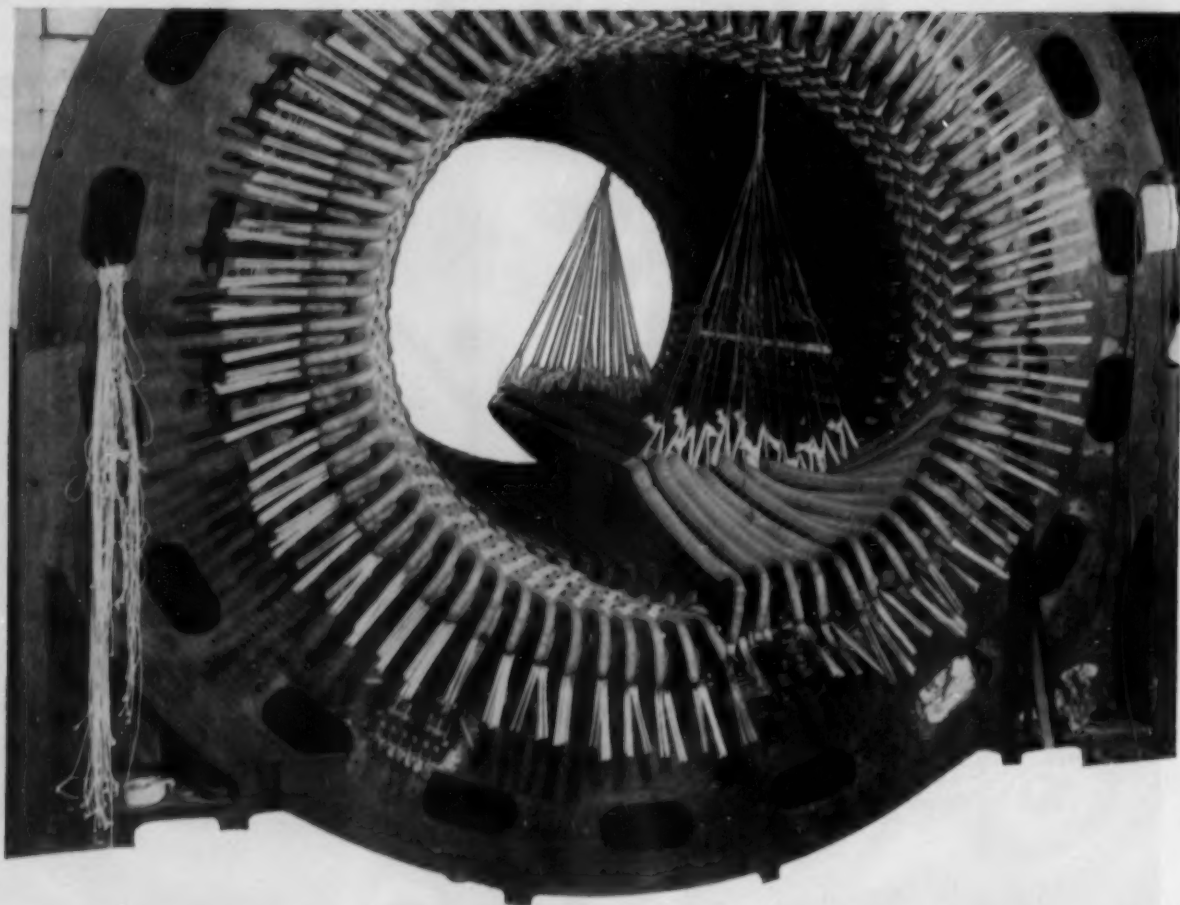


For more specific data about Buell's extra efficiency, write Dept. 80J, Buell Engineering Company, 70 Pine Street, New York 5, N. Y.

# buell



Experts at delivering Extra Efficiency in **DUST COLLECTION SYSTEMS**



## WHY WESTINGHOUSE REPLACEMENT COILS MEAN BETTER THAN NEW PERFORMANCE

Now! Westinghouse exclusive Thermalastic® insulated replacement coils are available for your motors and generators. Here are new, superior coils that will greatly extend the "new life" you rebuild into your equipment. Here are coils that will upgrade and, in most cases, actually uprate your equipment.

- Void-free. Impervious to moisture, ordinary solvents, oils, weak acids and alkalis.
- Thermal stability, and voltage endurance increased at least 10 times.
- Mechanical strength increased more than 30 times; dielectric strength increased more than 20 percent.

- Extremely elastic . . . follows expansion and contraction of copper.

- Does not deteriorate with age . . . long-time storage of spare coils no problem.

Westinghouse maintains a network of 38 repair plants strategically located over the United States where Thermalastic windings are applied to motors, 200 hp and up, and generators, 150 kv and larger. Westinghouse Field Service makes thorough and lasting repairs to equipment not conveniently moved from your plant.

Contact your Westinghouse sales engineer . . . or write Westinghouse Electric Corp., 3 Gateway Center, P. O. Box 868, Pittsburgh 30, Pa.

J-95170

YOU CAN BE SURE...IF IT'S  
**Westinghouse**



## Armstrong Unit Trapping —Low Cost Insurance of a Big Investment

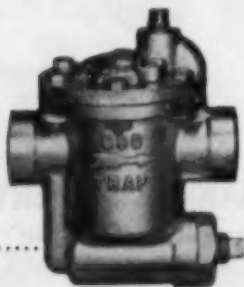
● 30% more production from kettles . . .  
84 degrees higher dryer temperatures . . .  
8% more output from dry kiln—these  
are typical results of unit trapping  
with Armstrongs.

What about your plant? It doesn't  
make good business sense to spend  
\$500, \$5000 or \$50,000 for equipment  
and then lose 10% to 30% or more of its  
productivity for lack of proper trapping.

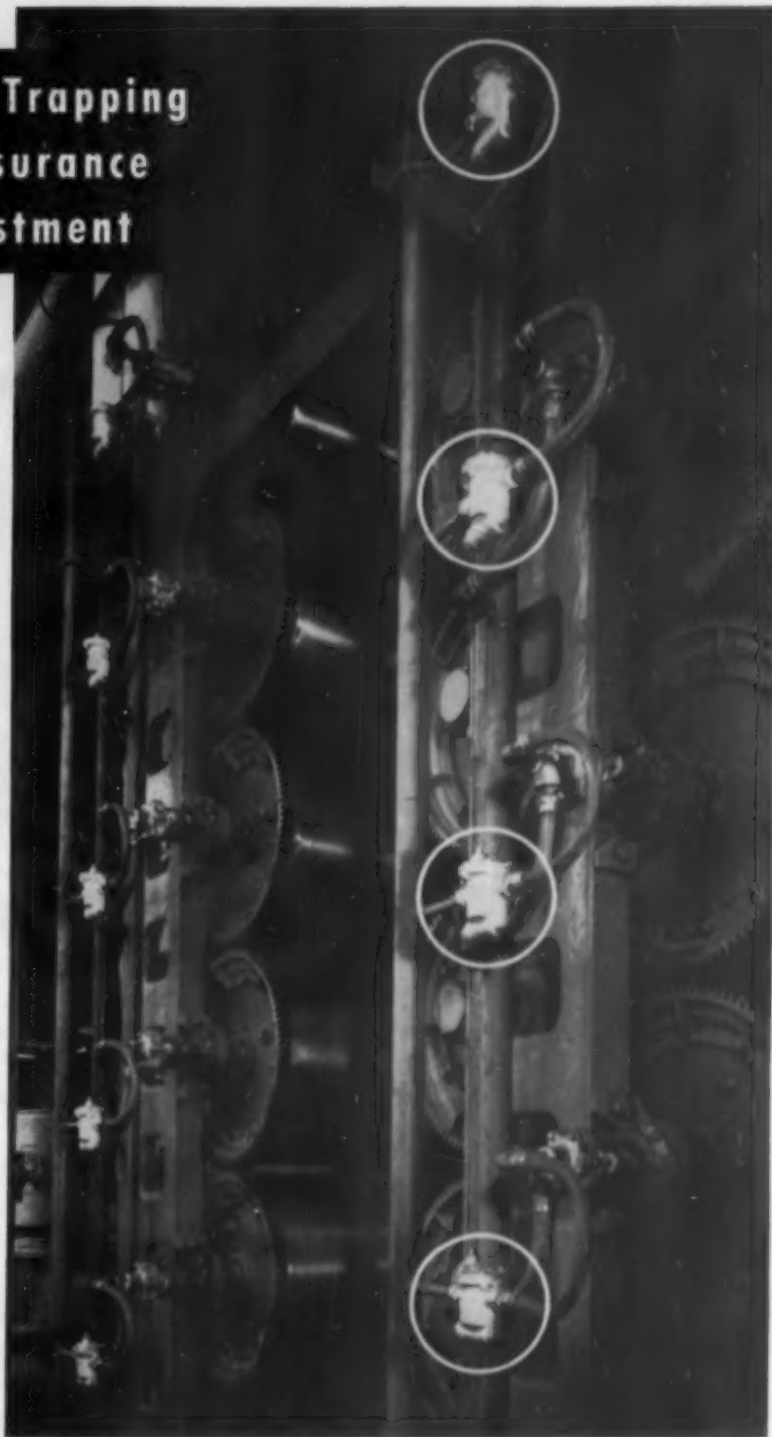
Armstrong traps are "application  
engineered" by men who know trap-  
ping thoroughly—how to size traps  
for fast heat-up and top temperatures  
. . . correct installation practice . . .  
steam supply and return line require-  
ments . . . variable pressure problems  
. . . mysterious difficulties. The cost  
of retrapping with Armstrongs is usu-  
ally but a fraction of 1% of the cost  
of the equipment drained—*low cost  
insurance of a big investment!*

Call your Armstrong Representative  
today. He sells on a basis of "satisfac-  
tion or your money back." Or, write:

**ARMSTRONG MACHINE WORKS**  
806 Maple St., Three Rivers, Mich.



Armstrong built-in strainer traps, pictured  
on textile dry cans at the right, cost less  
to buy and install than standard traps  
and separate strainers—they reduce  
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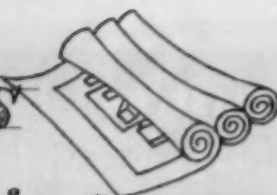
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# HOFFMAN'S ENGINEERED SYSTEMS *designed to do the tough jobs in industry*



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ASH • DIRT • GRIT • HEAVY DUSTS**

Portable Hoffco-Vac Unit, suitable for general cleaning work, demonstrating its capacity for materials conveying with a special high-efficiency cyclone for separation. See it in operation at Booth 257, Chicago Exposition of Power & Mechanical Engineering.



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HOFFMAN portable vacuum cleaners are also available in 1½ to 7½ HP capacities.

See how effectively HOFFMAN Equipment can improve clean-up and production requirements in your plant. Talk it over with a HOFFMAN Engineer.

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**U.S. HOFFMAN MACHINERY CORP.**

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**IT'S NEW!**

**NO OTHER STEAM TRAP LIKE IT!**



## New Sarco Thermodynamic Steam Trap practically eliminates maintenance!



**Only moving part—a hardened Solid Stainless Steel Disc—practically wear-proof!**

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1. Same trap for all loads and pressures 10-600 psi.
2. Closes tight on no load.
3. Operates against back pressures up to 50% of inlet pressure.
4. Not affected by superheat, water-hammer, vibration, corrosive condensate.
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### SIMPLICITY—to the Nth degree!

No valve-closing mechanisms to wear or stick. No critical clearances to choke. No gaskets to leak. Three simple parts...machined from stainless steel bar stock. Only one moving part.

What could be simpler?

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Sarco Company, Inc., Empire State Bldg., New York 1, N. Y.

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☐ A Sarco Thermodynamic Steam Trap for 60-day trial. Size \_\_\_\_\_ for installation on \_\_\_\_\_

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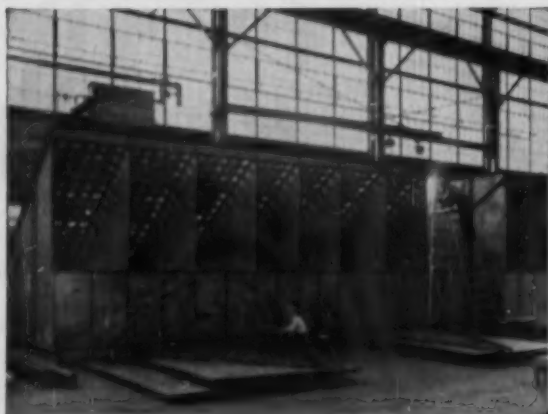
## *American Blower*

*reports on progress  
in power*



Gorgas Steam Plant No. 2, with 428,000 hp capacity, is on the Warrior River. Plant No. 3 (right), under construction, will house

# Alabama Power ups capacity to



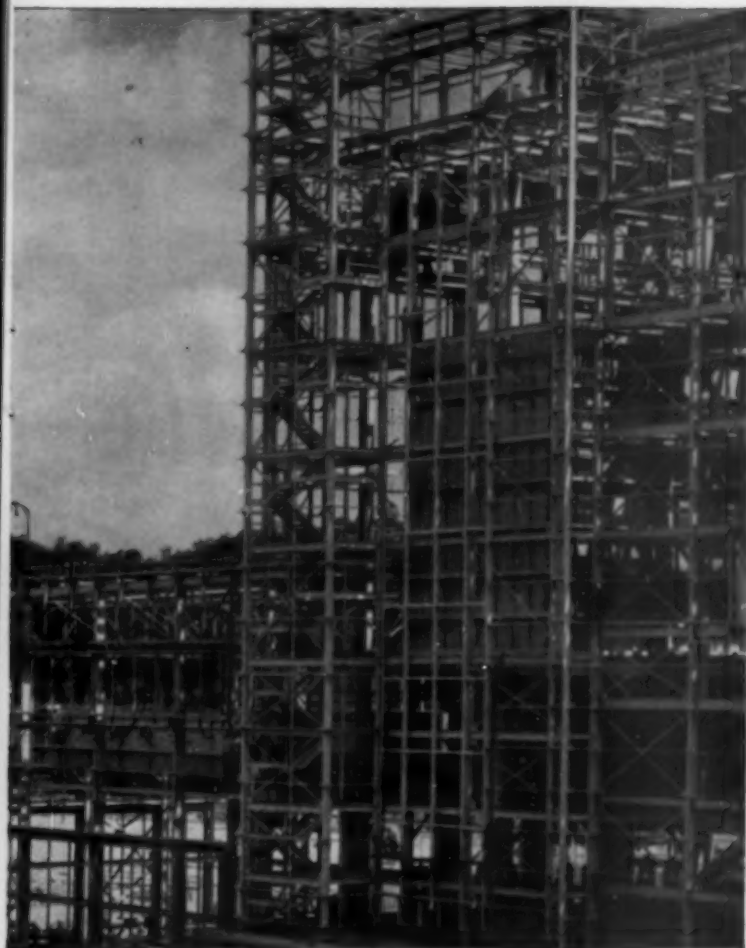
While Gorgas Steam Plant No. 3 is being built, American Blower constructs two Fly Ash Precipitators which will be installed in this new plant. Ratings: 340,000 cfm @ 285° F.

**As in the past, Alabama Power installs American Blower equipment—in building for the future**

WITH six steam and six hydroelectric plants, the Alabama Power Company forges ahead for the future of Alabama. In 1955 alone, it will invest more than \$35,000,000 in bigger and better electrical facilities, including an eighth generating unit at their Gorgas Steam Plants. When completed this year, Alabama Power's capacity will be over 2,000,000 hp!

American Blower Forced and Induced Draft Fans, Fly Ash Precipitators and Gýrol Fluid Drives are being installed in this new plant.

From coast to coast you'll find American Blower playing an important role in the expansion and modernization of many other progressive, investor-



No. 8 generating unit, rated at 208,000 hp.

# over 2,000,000 hp!

owned utilities. Plant operators have come to rely on American Blower Heavy-Duty Steam Coils and Fly Ash Precipitators, as well as our Mechanical Draft Fans, Dust Collectors, and Gýrol Fluid Drives for boiler-feed pump and fan control.

Give us a call to discuss *your* program. An experienced representative will gladly go over your requirements, and recommend equipment of the highest efficiency and economy. Contact your American Blower or Canadian Sirocco Branch Office.

AMERICAN BLOWER CORPORATION, DETROIT 32, MICHIGAN  
CANADIAN SIROCCO COMPANY, LTD., WINDSOR, ONTARIO

Division of American Radiator & Standard Sanitary Corporation

## AMERICAN BLOWER

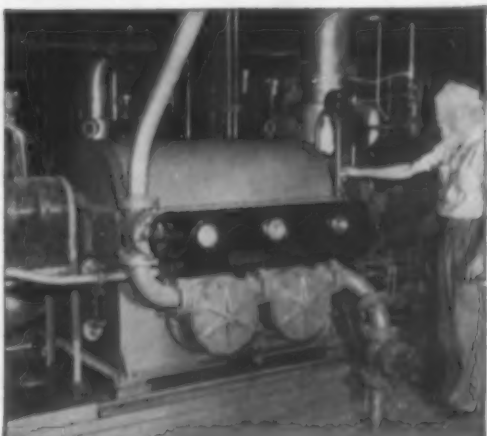
SOUTHERN POWER & INDUSTRY for OCTOBER, 1955



**Gorgas Unit No. 7** uses American Blower Fans with Gýrol Fluid Drives. Induced Draft Fans (above) are rated @ 262,500 cfm @ 270° F @ 15.25" sp @ 569 rpm.



**American Blower** Forced Draft Fans on Unit No. 7 at Alabama Power's Gorgas Steam Plant are capable of 180,000 cfm @ 140° F @ 11.00" sp @ 868 rpm.



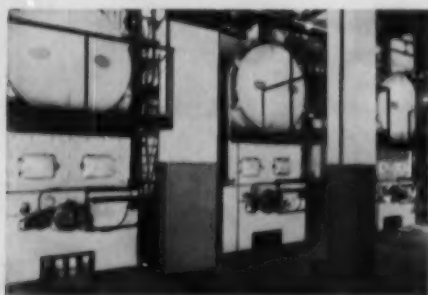
In addition to fan control, American Blower Gýrol Fluid Drives — class VI, 1500 hp — are used for adjustable speed control of boiler-feed pumps.



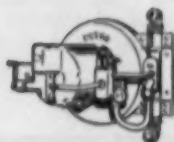
TISHMAN REALTY AND  
CONSTRUCTION COMPANY, INC. INSTALLED

# 20 PETRO OIL BURNERS

IN TEN BIG NEW YORK BUILDINGS



Sutton Terrace (shown at top) consists of three 12-story buildings accommodating 495 families. Heat is supplied by three Titusville boilers, each rated at 42,500 sq. ft. of radiation and each fired with a WD 8 AH Petro burner. This installation has three 15,000 gallon, 10 ft. diameter fuel storage tanks.

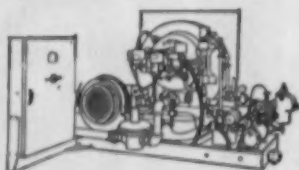


## ROTARY OIL BURNERS

Horizontal rotary oil burners make possible substantial fuel savings by burning the low-cost heavy fuel oils with complete dependability. Models for every industrial need. Capacities up to 600 boiler horsepower.

## COMPLETE PACKAGED UNIT

A complete forced draft combustion system with all parts factory assembled and tested. Saves installation time and cost, gives top performance and fuel economy.



"Petro oil burners give us the cleanliness, dependability, and economy of operation we require," says Alan Tishman. Providing heat for 9 huge apartment developments and power for a 13-story manufacturing plant is a tremendous responsibility, but Tishman Realty and Construction Co. Inc., have found that they can rely on Petro oil burners to do the job. "The ability of our Petro oil burners to immediately respond to fluctuating heat and power demands without over-firing or under-firing is a vital factor in keeping our fuel costs low and our tenants happy," says Mr. Alan Tishman.

**Oil automatically preheated for sure firing and lower fuel cost** To insure quick positive starting and steady, uniform firing, Petro oil burners automatically *preheat* oil to an efficient temperature before it is injected into the firebox. This Petro method of preheating oil also enables users to burn the heavy fuel oils (Nos. 5 & 6), which average 8% richer in heat value, without complicated mechanical gadgets that cause service and adjustment problems. You save worry and money with Petro oil firing.

## PETRO oil burners are adaptable to any boiler room

Petro industrial oil burners are designed and built to *modernize* the firing of your present boilers. The flame is adjustable to any firebox, and the installation is adaptable to any boiler room layout. This means that you save substantially on initial installation costs, and save more money every day on fuel and labor costs. Mail coupon for free catalog and information.

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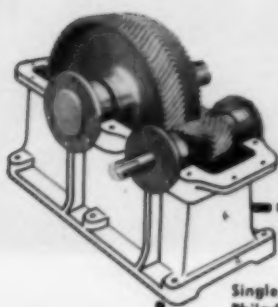
OVER 50 YEARS OF LEADERSHIP IN AUTOMATIC  
HEATING AND POWER EQUIPMENT

SOUTHERN POWER & INDUSTRY for OCTOBER, 1955

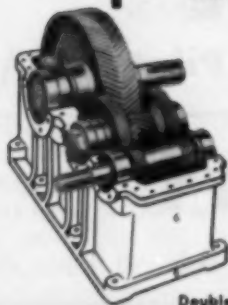




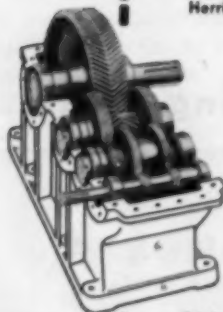
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If you have a problem involving high horsepower speed reduction with heavy shock loads, Philadelphia Herringbone Reducers are the answer. These quality-built units are available in Single, Double and Triple Reduction types, offering a wide selection of capacities and reduction ratios. The continuous tooth type herringbone gears assure evenly distributed pressure over each tooth from the top to the working depth line, — which means exceptionally long life, minimum vibration, quiet operation and maximum transmission of power...Thousands of Philadelphia Herringbone Reducers are in daily use, in most every line of industry. Be convinced, send for Catalog H-49.

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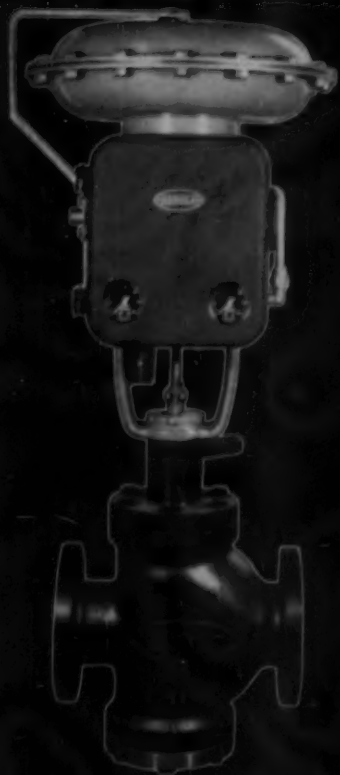
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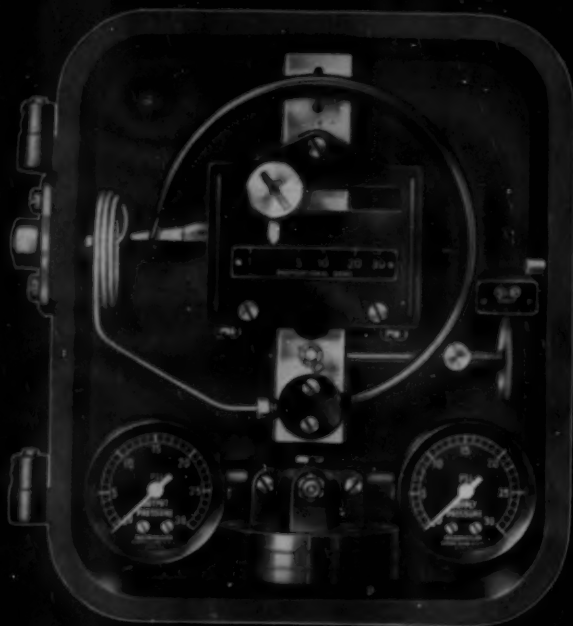
Virginia Gear & Machine Corp., Lynchburg, Va.

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Model 2807 — Valve Mounted.



Model 2800 or 2807 with Bourdon Element Positioned for Direct Action. Proportional Band 1% to 30%. Valve, Surface or Panel Mounting.

**FAST RESPONSE**  
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Model 2830 or 2837 Differential Gap Controller.  
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Model 2800 — For Panel Mounting.

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These new controllers combine all the basic requirements of pneumatic proportional controllers with the added features of a high capacity, balanced, amplifying relay pilot; proportional band setting as narrow as 1% (as wide as 30%); pneumatic feedback; reversible action. Simplicity is achieved by unit construction of subassemblies and air passages integral with the case. Models 2807 and 2837 are provided with rugged weatherproof cases for outdoor use — suitable for valve or surface mounting.

A wide selection of pressure ranges is available between 30" Hg Vac and 10000 psi, with bourdon or bellows primary elements of materials most suitable for the pressure and fluid conditions.

The performance of these controllers, obtainable at moderate cost, makes the advantages of instrument control feasible for the majority of pressure control applications.

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Investigate these controllers — ask our representative nearest you, or write for details.

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# Chapman List 960



## ...for EVERY Small Forged Steel Gate Valve Application

Month after month, Chapman List 960 Valves deliver the goods on more different jobs than any other small forged steel gate valves. And maintenance charges are few and far between even under the toughest conditions.

The wedge gate faces — hardened to 800 Brinell by Chapman's exclusive Malcomizing process — won't seize or gall. Seat rings are hardened stainless steel, for minimum wear, and are easy to replace. Also, the bolted follower has no exposed threads on the yoke to corrode.

For every small forged steel gate valve application, specify Chapman List 960. Sizes from  $\frac{1}{4}$ " to 2", either rising stem with yoke (shown) or rising stem with inside screw. Bonnet joint is ground metal-to-metal or gasketed, depending on application. Pressure range is from 380 psi at 1000°F to 2000 psi at 100°F. For higher ratings, specify List 990.

List 960 is made in various alloys and combinations of alloys as listed in Catalog No. 10. Write for your copy today.

**The CHAPMAN Valve  
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INDIAN ORCHARD, MASSACHUSETTS



# TIMELY COMMENTS



## Eighth Annual Better Production Issue

**T**HERE IS NO BETTER time for an annual CHECK-UP than October. That is why we publish our ANNUAL BETTER PRODUCTION ISSUE on October First. Vacations are over, the year's operation is nearing the end—and maintenance and replacement budgets are foremost in the minds of plant engineers.

We do not propose in this issue to give specific answers to the reader's particular problems but rather to stimulate his thinking and indicate where needed information may be obtained.

We do not even expect each subscriber to read all of the many short articles in this issue. But we do know there is meat in this issue for every industrial and utility engineer that will seek it. Our headings are short, honest and informative. By scanning these headings, the reader can quickly decide which articles merit careful consideration by him.

How do we know you will find helpful ideas? Because we have been presenting a similar issue each year for eight years. And each year we send out questionnaires to a number of readers asking them to evaluate the issue. They rate it very high. One of the questions we ask is: Did you find information that helps solve your immediate plant problems? The readers practically all say "YES!" Therefore, the editors feel they are on safe ground in recommending this issue to their readers.

In fact, most of the articles come to us direct from engineers of plants in the South and Southwest. And all of the articles deal with problems and answers in the area we serve—the nineteen Southern and Southwestern states.

Perhaps this annual Better Production issue gives the editors more pleasure and stimulation than any they prepare. That is because it places them in direct contact with so many subscribers and advertisers. Over 5,000 form letters are sent out asking help; and many, many replies are received. After the form letters come hundreds of personal letters to people that are interested in helping us give you good, accurate, direct information.

More information is available on all of the items briefed in this issue. Just write the editors and mention the items by "CASE NUMBER." We will try to see that any necessary additional information is supplied.

FRANCIS C. SMITH, Editor



**Q.** How can I avoid costly field corrections when installing floor grating?

**A.** SPECIFY BORDEN and receive a completely custom fabricated floor grating including cut-outs, toe plates, fasteners and stair nosings. Be sure with BORDEN'S FREE PLANNING AND CHECKING SERVICE.

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SOUTHERN PLANT—LEEDS, ALA. — MAIN PLANT—UNION, N. J.

# INDUSTRY SPEAKS

SOUTHERN POWER  
AND INDUSTRY

## Plant Maintenance and Modernization

These were the observations of **BERNARD EICHWALD**, noted electrical engineer and contractor, who conducted a seminar at the **Young Presidents Organization** 5th annual convention at the Arizona Biltmore Hotel in **Phoenix, Arizona**. The Young Presidents Organization is a national group comprised of company heads under 40 years of age whose firms do more than a million dollars annual business.

**E**QUAL skill and thinking should be directed to both maintenance and production. Both departments have the same responsibilities. They include the use of most efficient manpower, delivering the goods on schedule, and maintaining the lowest possible product costs.

American industry will realize increasing production requirements and with them increasing costs of labor and equipment in the next ten years. To meet these problems, old equipment must be used more efficiently, and higher degrees of mechanization such as automation will become a necessity. In order to adequately handle automation problems, more highly skilled personnel and well planned preventive maintenance will be the inevitable need.

In considering maintenance, **MACHINERY** (though of the prime importance) is not the only factor. Fixed parts of buildings (floors, walls, ceilings), the influence of chemicals, gases, and fluids, fire protection, sanitation, and general safety should all be seriously considered. If properly planned, good plant maintenance can result in lower insurance premiums due to decrease in fire and personnel dangers, as well as increased efficiency.

Standardization is also an underlying factor for maximum productivity and maintenance. As an instrument of proper planning and control, stand-

ardization can save parts inventory, affords smoother production flow, and reduces employee training time.

Now is the time to standardize your operation and unscramble the bottlenecks and delays.

Defined by Eichwald as the "automatic performance of a control system by mechanization instead of human force," automation includes automatic handling of materials from the raw material to the packaged item—temperature, velocity, pressure, processing, assembly, receiving, storing, control and computing data, etc. The base for all is the machine—mechanical and electronic. This machine, however, will never replace judgment. A new labor problem will therefore arise and with it the demand for more highly trained men.

Automation is not limited to large plant use. Competition will compel small businesses to make use of modern trends. An automatic plant with low overhead on certain goods can readily compete with the big operator with higher overhead. The existing set-up should be carefully and thoroughly analyzed to determine whether the best methods and materials are being used.

To correctly analyze the basic operation and pinpoint the phases requiring automatic control, it is necessary to have a full evaluation of all personnel operations as well as plans and records of equipment.

Contrary to what some people expected, unemployment due to automation has not occurred, but the effect of automation on labor, as well as its moral and psychological effect on employees and labor unions, must be carefully considered. As long as our economy remains as it has been for the past years the immediate problems of automation will work themselves out, and the worker's standard of living will steadily increase.



## Section 1

# Plant Service Equipment

Case 1—Mississippi Cotton Oil Mill

### Combination Lighting Increases Output

**T**HE BENEFITS of a wise investment in good seeing conditions may take many forms. Some are tangible while others are not, and it is sometimes hard to prove the actual value of an improved lighting system. It is

generally agreed, however, that good lighting increases production, contributes toward better workmanship, continues production by older workers, produces less eyestrain, reduces accidents, builds employee morale, and con-

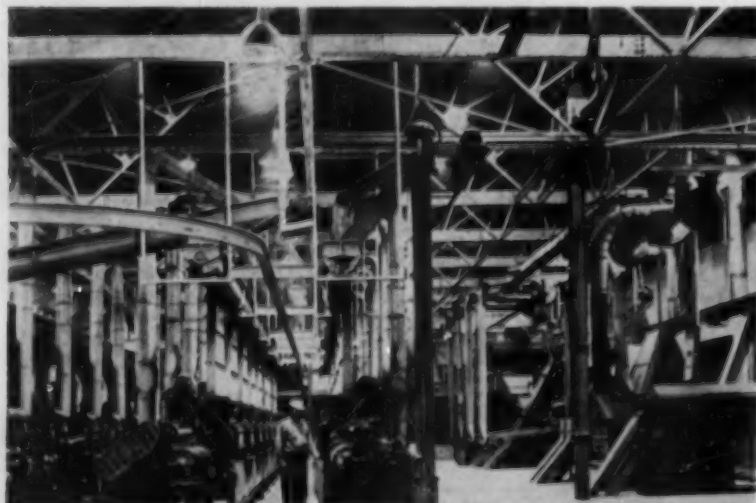
tributes to better housekeeping.

Any lighting system that accomplishes these things must economically produce a high quantity of good quality light. The choice of the light source, whether it is mercury, filament, fluorescent, or a combination of these, depends upon the particular requirements of each individual application. In this case, the Hollandale Cotton Oil Mill management decided upon a combination of General Electric mercury and filament system.

Mercury lamps have the advantage of high light output per lamp, high efficiency, and long life. Because of their higher brightness, fewer lamps are needed to produce a given lighting level. This, in turn, reduces the initial investment and maintenance costs. However, mercury lamps produce a bluish white light which distorts colors. So filament lamps were added as they are rich in red light. Combined they produce a fairly good white light.

The use of two different light sources, in one system, is good insurance also in the event of power interruption. Mercury lamps

Two different light sources in one system.





require a few minutes to cool before they will start after power restoration. But filament lamps start immediately after the power is restored. This is particularly important in areas where there are assembly lines and dangerous machinery.

Greater safety and higher efficiency is attributed to the improved lighting throughout the plant at Hollendale Cotton Oil Mill, Hollendale, Mississippi.

Mr. W. E. Campbell, general superintendent, says: "Our accident rate has definitely been lowered because of the relighting. Also, morale is higher because our people can go about their

work without fear of accidents. We estimate that the efficiency of our workers has been increased at least 15% since we installed this modern lighting."

Combination mercury vapor and incandescent system delivers 40 footcandles to all production jobs. Workers at saw filing machines can do their jobs more quickly and with greater safety. Units overhead each have one 400-watt mercury lamp and one 300-watt incandescent.

These mercury lamps have been burned over 5,000 hours with no burned out lamps to replace, thus far.

were used, test panels showed discoloration of the copper powder along the streaked area within three months.

It was quickly determined that these streaks and spots were mineral deposits left when the water was evaporated in the dry-off oven. To eliminate them they tried various kinds of water softeners, several agents suggested by chemists to counteract or precipitate these minerals, washing in distilled water, cleaning naphtha, and various types of metal preparation liquids.

At once it became apparent that their automatic washer system was of no value under the existing conditions. Until pure water could be obtained in adequate quantities, they were forced to rely upon a small vapor degreaser, and uncertain hand preparation of the metal parts before painting.

#### Case 2—Texas Manufacturing Plant

### Deionized Water Solves Finishing Problem

**T**HE Vent-A-Hood Company, Dallas, Texas, claimed to be the oldest manufacturer in the United States of home cooking-ventilation hoods, was founded in 1936 and has national and international distribution.

In their search for better and more economical methods of manufacture, an analysis showed that in the finishing operation they were using a three-stage cleaning process consisting of a phosphate wash, a cold water rinse, and a chromic acid wash. They were controlling temperatures, humidity, type and concentration of cleaning compounds, type and viscosity of paint, and baking time.

#### Water Trouble

They realized early this year that the one element in their operations which they were not controlling was the quality of water used. An analysis of the city water being used as makeup and rinse showed it contained 25 grains of calcium and magnesium salts, and 21 grains of sodium chloride.

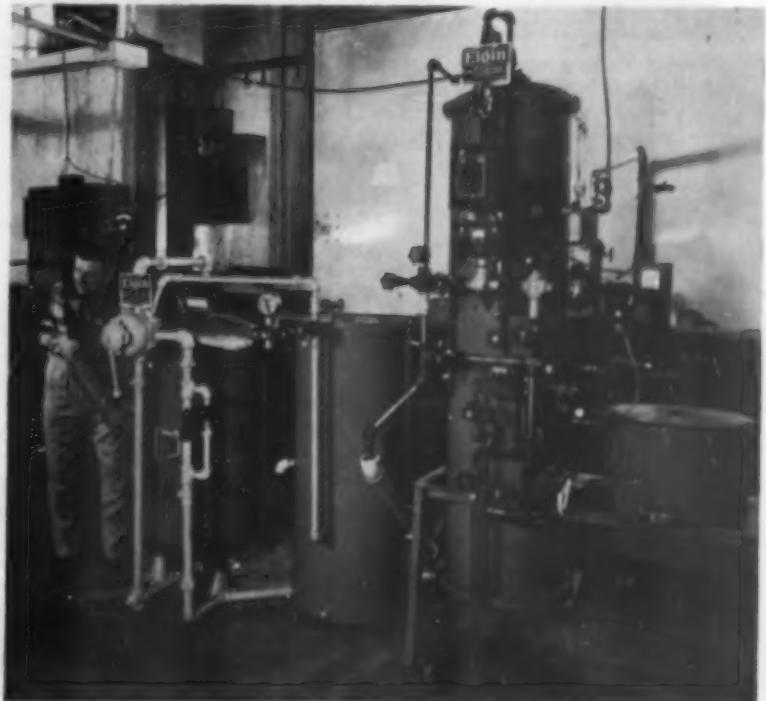
They decided that these materials had a noticeable effect upon the quality of the wash and phosphatizing of fabricated metal parts previous to painting. The iron phosphate coating became streaked

and spotted, indicating that the metal was not perfectly clean. Tests were conducted which showed that the paint was not adhering tightly to these streaked areas. Where copper metallic finishes

#### Deionizer Installed

Paul Simmons, the district representative of Elgin Softener Corporation, who was called upon to survey the water problem, recommended the installation of an Elgin Ultra-Deionizer. This type

Elgin Ultra-Deionizer shown at right. Soft water influent to deionizer is provided by Elgin Water Softener at left.



mixed-bed deionizer of mono-flow design would provide the high quality water required at an economical cost.

The equipment was installed, the washer system thoroughly cleaned, and all tanks were filled with deionized water. No change was made in the cleaning equipment proper. The chromic acid wash was omitted and a deionized water rinse was substituted for it.

It was felt that to be absolutely safe, no mineralized water should be allowed on the metal in any stage of the washer, otherwise carry-over as the parts passed from stage to stage would require a

constant check on rinse tanks. Using this method, experience has shown that rinse tanks need not be dumped more than once every three days with their present production schedule. They recharge their deionizer once each week.

The use of deionized water has completely solved their metal preparation problem in the finishing department. They are getting a better metal cleaning job than ever before, and the iron phosphate coating is as perfect as any they have ever seen, resulting in a very gratifying tight paint adhesion. They only regret that they wasted six months of their time and con-

siderable more than the cost of the demineralizing equipment in trying to combat the problem by various other means.

The institution of the new cleaning system has enabled the company to transfer from the cleaning department to other departments the direct labor of three men; the overall cost of cleaning material has been reduced by about 20%; the cost of the deionized water is so small that the manufacturer does not attempt to keep a record of it. The overall estimated life of the deionizing equipment is 10 years.



Testing the new equipment in Birmingham are, left to right, Thomas B. Smith, branch manager, Dictaphone Corp.; George M. Rust, Rust Engineering Co.; J. C. Tate, district sales manager, Southern Bell in Birmingham.

#### Case 3—Alabama Engineer's Office

### Automatic "Dial" Stenographer

THE Birmingham office of the Rust Engineering Company has 100 employees, which include 12 secretaries, a five-man purchasing department, two accountants and 81 engineers. Approximately 25 of the engineers are in administrative and management positions.

Their demand for secretarial assistance is very erratic. In fact it has been determined over a period of several years that the stenographic force is busy less than 50% of the time, yet on occasions, two or three men with

reports and proposals to prepare, can tie up the entire stenographic group continuously for several days.

The work load for the Rust Company is so erratic that it is not feasible to assign stenographers to individual men or to individual groups.

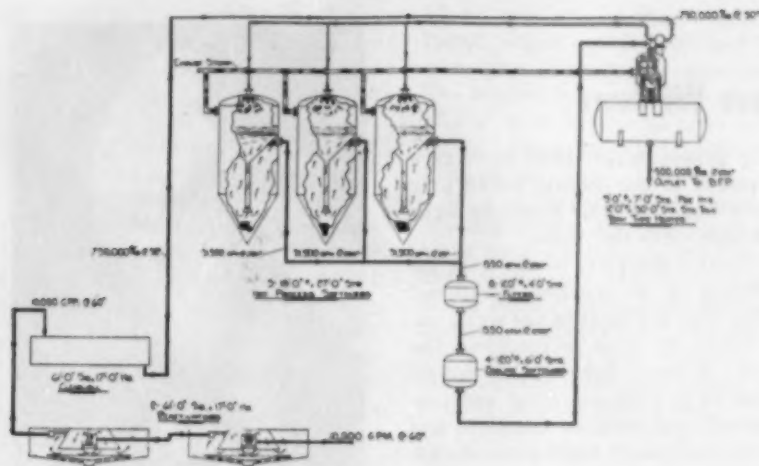
#### Connected To Dial System

Through centralized dictation installed for the Rust Engineering Company on their existing 740-E dial PBX system, two dictaphone

recorders which are connected to the dial system for dictating are now available to everyone in the office. Dictation is accomplished by simply picking up the telephone and dialing the digit "8" and then controlling the dictaphone machines by dialing single digits to start and stop the machines, make corrections, mark end of letters, or to call the attendant at the machines. Seventy-five per cent of all the correspondence has been diverted to the machines and then transcribed by two stenographers who have continued to perform the bulk of their previous duties.

The Rust Engineering Company reports that the men are enthusiastic over the machines and feel that this method of handling correspondence is the best answer to their particular needs. They also feel it will pay for itself by permitting their administrative and executive personnel to dictate routine matters whenever the need arises and thus free them at once for more technical duties. It is just as if each man had a stenographer at all times.

The dial switching equipment necessary to perform this service is furnished by the Southern Bell on a leased basis but the customer owns and maintains his own dictating machines. This is the first installation of this type service in the Company. However, other orders are pending and many inquiries have been received throughout the Company.



Case 4—Southwestern Refinery

## Single Deaerator in Large System

**A**T A large oil refinery in the southwest, Graver Water Conditioning Co. furnished an extremely large hot process-hot zeolite system.

The system consisted of two 61' square Graver Reactivators operating in parallel and handling 10,000 gpm total. These high rate units are clarifying a canal water for process use.

Seven hundred and fifty thousand lb/hr of this clarified water then goes to three Graver 18'0" diameter hot process softeners, also operating in parallel. From there the water goes to eight 120" diameter filters and four 120" diameter hot zeolite softeners to be softened to zero hardness. The water was then to go to the deaerating heater.

Here, the oil refinery was faced with the problem of installing a single deaerator following the three-unit hot process hot zeolite softening system and supplying steam to all units. As indicated in the flow sheet, a single Graver deaerator was employed following the three hot process softeners. A thoroughfare steam and water flow system was not practicable because of the difficulty and expense of splitting the steam flow after it would leave the heater.

The total outlet capacity from this heater is 500,000 lb/hr, operating normally on 100% makeup.

The solution to this problem was to employ a Graver tray type heater

and utilizing oversized vent condensers on the heater, through which cold, clarified makeup water is passed. By the proper design of heat exchanger or vent condenser, more than 14,000 lb/hr of steam is condensed in the vent condensers, creating sufficient steam velocity in the cross-flow tray units to give complete deaeration.

It was expected that the clarified cold makeup employed to condense steam in the vent condenser in the heaters could form scale with continued operation, so that bypass piping and internal vents were furnished for ease of cleaning of tubes during operation.

The heater is a 9' diameter x 7' straight deaerator, mounted on a 12' diameter x 30' long storage compartment. Storage of deaerated water is 175,000 lb or 20 minutes. Stainless steel tray units are employed in the cross flow heater. The external tubular vent condenser has a steel shell. The shell of the deaerator is unlined steel.

A tray unit heater was selected for this application because of the need for longer holdup in the heater trays proper for good deaeration at the steam velocities generated by condensation in the vent condenser. Oxygen entering with the hot zeolite effluent should average less than 0.1 ppm, pH of 9.5-10.2, MO Alkalinity of 20-35 ppm, and TDS varying between 300-500 ppm.

## Case 5—North Carolina

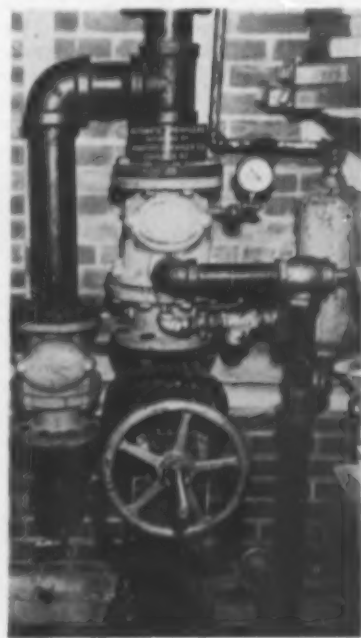
## Automatic Sprinklers Cut Insurance Costs

**K**LUTTZ MACHINE AND FOUNDRY CO., Gastonia, N. C., made an addition to existing facilities by building a 40 ft. x 40 ft. brick structure adjoining the machine shop and connecting this building to the old foundry.

The insurance rate on the foundry building was (and is) \$1.70 per hundred. The insurance agency wanted to set the rate for the adjoining structure and contents to \$1.25 per hundred (the new structure was solid brick, except roof).

The company installed a Crawford Sprinkler Co. automatic sprinkler system for fire protection, and the insurance company agreed upon a rate of 25¢ per hundred of insurance. The company expects to save the cost of the sprinkler installation in four to five years in addition to having the protection. This nets a 20% return on the investment per annum as well as providing protection after amortization, according to W. A. Kluttz, owner.

Valve and control station for automatic sprinkler system.





## Glass Block Replaces Windows

**W**HEN the ills common to a fifty-year-old building began compounding into heavy maintenance costs, as well as employee discomfort and friction—the State of Virginia's Division of Motor Vehicles decided to take steps to remedy the situation.

### Maintenance Problems

The aging windows and wooden sash presented many serious maintenance problems. The old sash required yearly painting. Storm windows purchased for the drafty conditions also had to be painted. Venetian blinds, installed to control glare, had to be cleaned, serviced and repaired. A carpenter was frequently engaged on the wooden frames which often rotted at the bottom. About 75 to 80 panes per year had to be replaced at an average cost of three to four dollars each.

### Glass Block Installation

The company finally decided to replace all sash with glass block fenestration. A field representative of the Pittsburgh Corning Corporation was called in and recommended Essex light diffusing for below eye level and Prism blocks for above eye level. The Prism blocks contain light direct-

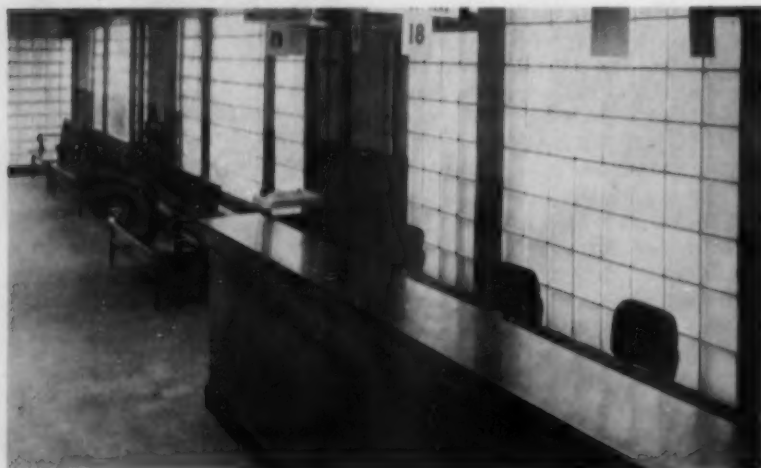
ing prisms which bend light rays upward to the ceiling, which acts as a huge reflector bouncing light further into the room.

Over 1,600 glass blocks were installed in 88 window apertures. One man did most of the work, requiring 75 days to complete the job. A large arch (30 ft across and 34 ft high) required approximately one week to complete and contained about 1,800 glass blocks. The arch is supported by two horizontal steel beams and one vertical steel beam. Argus decorative blocks were used to frame the four doorways and on interior partitions. They were also used in the 16 windows on the north side of the building.

### Production Advantages

During the five years since the blocks were installed, there has been no maintenance required—no painting, repairs or replacements. No water or air leaks have occurred even though relatively inexperienced labor was used. The air conditioning equipment (installed several months before the glass block) has had its load reduced. The full load required for the old type windows was reduced 50%. Fuel for winter heating has also been reduced.

Note absence of glare and even penetration of diffused daylight in this view of general reception area.



Employee of Louisville Cement Company uses U. S. Hoffman Stationary Vacuum Cleaning System hose in general plant clean-up.

### Case 7—Kentucky

## Vacuum System Saves Cement

**A** 100% improvement in efficiency and a conservative estimate of 50% time saved in trimming and salvaging cement are the reported achievements toward better production methods at the Louisville Cement Company, since the installation of a stationary vacuum cleaning system.

The system, installed by the U. S. Hoffman Machinery Corp., is used to trim cement from "trucks" and convey it to a central point for salvage. It is also used for general maintenance cleaning.

Handling rate ranges from 225 lb to 300 lb per minute. It is estimated that as much as 1,000 barrels per day have been picked up and conveyed to a central salvage point through the use of the equipment. One man operates the system, using a 25' length of 3" diameter hose, and in some cases, a 2" diameter hose. An 8" gulper nozzle is available for special type cleaning and conveying jobs.



Prior to the installation of the vacuum conveying system, the trimming, salvage and cleaning were done manually. This required the efforts of several persons, shovels, buckets, brooms and carriers. This method resulted in heavy dust conditions which interfered with the efficiency and speed of the operation—in addition to creating uncomfortable working conditions for the men involved.

The U. S. Hoffman Machinery Corp. stationary vacuum cleaning system consists of a multi-stage centrifugal exhaust driven by a

30 hp motor, a primary (centrifugal) dust separator and a secondary (bag-type) separator. The original piping system consists of 230' of 4" horizontal main with six 3" drops to three individual inlet valves.

It is estimated that the vacuum cleaning system has paid for itself since its installation a little more than a year ago. This return came in the form of savings on salvaged material, elimination of heavy dusty conditions and reduction in cleaning and operating costs, according to plant authorities.

days would require heat only part of the time.

#### Equipment Selected

Working with Allan and Hoshall, Memphis engineers, the Hunter Company ordered 10 gas-fired warm-air heaters, similar to those used in hundreds of other industrial plants in all parts of the country.

Calculating the heat loss in the structure to be 7,400,000 Btu per hour, Hunter installed five Dravo "Counterflo" heaters, each with a capacity output of 1,000,000 Btu per hour, four heaters, each with 500,000 Btu output, and one heater with 400,000 Btu. output.

All of the heaters were installed overhead to conserve floor space for working purposes, and were vented through the roof. A few remote areas were heated by means of hot air ducts where necessary.

Controlled by thermostats, the heaters provide a maximum working temperature of 70 degrees, with little or no attention required by maintenance personnel. In addition to giving economical heating when needed, the Dravo Counterflo heaters are used in hot weather along with Hunter's own line of fans and ventilating equipment to cool the working area.

By BEN SHELTON, Superintendent—Assembly, Hunter Fan and Ventilating Company, Memphis, Tenn.

#### Case 8—Tennessee Fan Plant

### Gas-Fired, Warm-Air Heaters Give Plant Flexible, Economical System

THE Hunter Fan and Ventilating Company of Memphis, Tenn., began its Southland operations during the war, producing ventilators for ships and motor parts for aircraft. Following the war, the company transferred its entire operations from New York state to Tennessee. In 1949 the business was purchased by Robbins & Myers, Inc., and the fan operations of both companies were combined in Memphis.

A new factory building, 350 by 420 ft, with 108,000 sq ft of floor space, was erected to handle the expanded operations. A one-story, concrete block structure, faced with brick, with built-up roof, the new factory has one-sixth of its total wall space in window areas.

#### Heating Requirements

Like many other industrial concerns in the South, the new Hunter plant was not equipped with a central heating system. Construction, operation and maintenance of a steam or hot water system were not considered to be justifiable from a cost standpoint, since heat would be needed only for short periods of time.

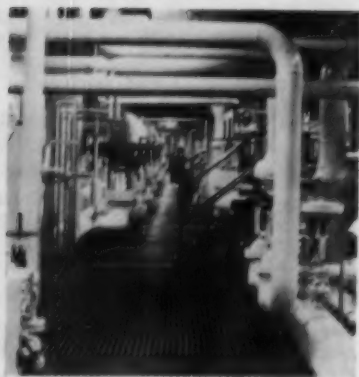
We felt that effective control of such a heating system would be practically impossible due to the wide and sometimes rapid fluctuations in temperature—when steam or hot water temperature was

built up to "take the chill" from the working area, it would become an "excess heat" factor as soon as the sun's rays would penetrate the building.

On these days when the temperature dropped to 40 degrees or below, only 30% of the days showed the temperature climbing above 60 degrees. Seven out of every 10 chilly days would require constant heat in the working area for comfort and efficiency. Three of the 10

The Hunter machine shop (foreground) is heated by an overhead Counterflo heater with an output capacity of 1,000,000 Btu per hour. In the right background, the tool crib area is heated by a 400,000 Btu unit. The warmed air is circulated through the working area by means of directional louver nozzles.





Case 9—Safety

## Modern, Safety Grating

A MODERN grating installation in an electric station is illustrated. Here you see a very practical use of Kerrigan Iron Works' Weldforged open steel floor grating. Because of its continuous spiral transverse bars that rise slightly above bearing bars (and alternate right and left) this grating provides excellent safety underfoot.

In hazardous areas around machinery and where workmen must make repairs to machinery in confined areas, Weldforged grating is especially valuable. Note its use in the photograph of the pipe gallery.

This open steel grating also sheds dust, lets through a maximum amount of light and air and requires practically no maintenance. It is simple to install as it is Weldforged into one-piece units with cut-outs for pipes and columns.

Case 10—Georgia

## Telemeters Safeguard Water Works System

WITHIN the past three years we have completed a central Dispatchers Office which is located in our general construction office. In this dispatcher's office, which is in operation 24 hours a day, are concentrated all controls and records pertaining to the distribution system. These include telemeters which constantly record pressures on mains at all vital points in the system; they also record pressures

at all booster pump stations and indicate water level in tanks at all times. Records of all mains, hydrants, valves and services are filed for ready reference in this office.

### Equipment Data

A diagrammatic map has a red and green light at the location of each telemeter gauge and a corresponding green and red light is at each gauge. Under normal operating conditions the green lights are illuminated, but if there is a variation from the preset pressure or water elevation, a chime sounds and simultaneously a red light shows at the gauge and on the map at the point where the change takes place. This indicates low pressure areas and localizes the position of a broken main so that repairs can be made with minimum delay.

The dispatcher directs operations

in the field through mobile radio units. The main station is in the dispatcher's office and auxiliary stations are in each of the other four divisions of the Water Department. In case of an emergency, if telephones are jammed, the stations can intercommunicate by radio.

The equipment also includes a Fire Department tape alarm recorder and if an alarm should indicate a severe fire, the dispatcher contacts the Fire Department to ascertain if the aid of the Water Department is required, and if so, a crew is dispatched to the scene.

The central control system has been very valuable in facilitating operations and safeguarding the entire system which now includes over 1200 miles of main.

By ROY RUGGLES, Chief Engineer of Construction, Atlanta Water Works, Atlanta, Georgia.

Case 11—Texas

## Polyethylene For Sandbagging

THE Texas City Plant of Carbide and Carbon Chemicals Company keeps on hand a supply of polyethylene bags filled with sand for diking in case of hurricanes or other emergencies. Polyethylene makes this ready supply possible for the plastic sheeting is not destroyed by rodents nor does it rot

in long storage. During an emergency when manpower is limited, the availability of prebagged sand is obviously important.

Polyethylene may be obtained in rolls of tubular form and cut to required lengths for filling with sand and sealing or tying the ends. If outdoor bag storage for extended periods is necessary, a suitable ultraviolet light resistant polyethylene compound should be used. The natural color bags may be used if they are stored indoors. The photo shows a pallet of polyethylene sandbags to be dispatched by a fork lift.

By M. K. ANDERSON, Engineering Department, Carbide and Carbon Chemicals Company, Texas City, Texas.



Case 12—Tennessee

## Production Increased By Air Conditioning

MANY industrial firms considering the installation of air conditioning or weighing the value of air conditioning will find of interest the experience of John Hardy & Son, Inc., Pulaski, Tennessee, manufacturer of ladies' full-fashion nylon hosiery.

John Hardy, Sr., president, re-

ports a 29% increase in production after installing air conditioning. On a Monday preceding the completion of the plant's air conditioning and humidity control system, girls in the seaming department of Hardy & Son seamed 225 dozen pair of hose. On the following Monday when the new system was in operation, the same operators, working the same number of hours with the same machines, seamed 444 dozen pair.

The company has been able to reduce the length of its workday and to eliminate Saturday and other overtime work. Because of increased production, employees can keep up with long rows of delicate 54 gauge knitting machines in the shorter period.

Another big saving has resulted from the fact that with air conditioning, machinery requires less maintenance. Knitting machines are 57 ft long and the needles have only .002 of an inch clearance. A 3 degree variation in temperature and 3% variation in humidity will cause expansion and contraction to the point of causing the machines to jam.

Prior to air conditioning, it was necessary that a maintenance man be available full time on all three shifts, constantly adjusting the machines. Since the air con-

ditioning and humidity system has been in operation, maintenance cost has dropped approximately 80%.

In addition, Mr. Hardy advises that a semi-annual cleaning of the machines is no longer necessary due to the cleaner, filtered air provided by air conditioning.

The manufacturer comments, "All departments have shown an increase in efficiency since the installation of air conditioning. As an example, our seaming department has made an overall increase of 29%. Individuals working on piece work, have increased as much as 33 1/3%."

The hosiery plant's air conditioning system consists of four Chrysler Airtemp 15-ton packaged water-cooled units tied into two duct systems that extend the entire length of the factory. The same ductwork is also used for heating. Two of the air conditioners—one on each dust system—are controlled by both a thermostat and a humidistat to permit removal of moisture during in-between seasons. Re-heat is used to control temperature under these conditions. Moisture is added in winter from a spray type humidifier plus atomizing nozzles.

#### Case 13—Delaware

### Central Vacuum System

**A** SAFER plant, better working conditions and lower insurance rates are the three-fold advantages realized by the Wilmington, Del., plant of Bond Crown and Cork Co., from a central vacuum system that cleans up cork dust from the cork processing area.

To keep the concentration of dust down to a safe level, Bond has instituted a carefully scheduled housekeeping program using an Exidust system, an industrial central vacuum cleaning system developed by Lamson Corp. The system consists essentially of a motor-driven exhaustor, a circuit of metal piping that carries the vacuum in the plant, and a set of



Clean-up operation around a vibratory separator, showing an accumulation of cork particles on the floor. Plug-in connection to the vacuum line is shown at lower left.

separators where the dust is collected for disposal.

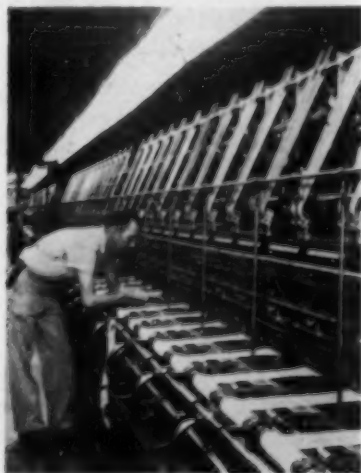
The vacuum piping is fitted with plug-in terminals at various locations, so that the flexible hoses and brushes used in the clean-up can be kept to a convenient length. To clean up a particular machine or area, the worker plugs his hose into the nearest outlet, vacuums that location, disconnects the hose and moves on to the next area. Hinged caps cover the outlet when the terminal is not in use.

Monday morning is chosen as the main clean-up time because the dust has a chance to settle over the weekend. Routine minor clean-ups are made daily.

#### Benefits

While the Exidust system is not an integral part of the production process, it makes some rather important contributions to plant operations. First, of course, is the elimination of a potentially serious fire or explosion hazard. Second, is the improvement of health and working conditions by holding down the concentration of fine cork dust in the air. Third, is a substantial reduction in insurance rates because of the reduced fire and health hazards.

The long rows of delicate knitting machines required constant, three-shift maintenance care before the installation of air conditioning. Since its addition, maintenance cost has been reduced approximately 80%.







## Section 2

# Piping and Accessories

### Case 14—Missouri

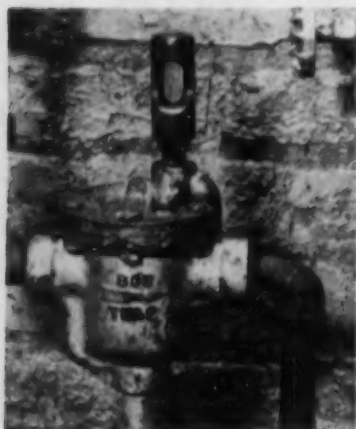
#### Checking Steam Traps

A SIMPLE, effective method of checking the operation of bucket type steam traps is now available to the trade with the introduction of the Vis-A-Plug. This small device, manufactured by Vis-A-Plug, Inc., of Sharon Hill, Pennsylvania, screws into the trap in lieu of the normal test cock and permits a quick visual check as to whether the trap is functioning properly or not.

In plant application, traps on

steam tracers and jackets must function properly or a product freeze-up will occur. Vis-A-Plugs have been installed in each trap in a large bank of traps and have succeeded in materially decreasing the trap checking time, which occurs once each shift. In addition, steam consumption has been reduced by prompt correction of malfunctioning traps.

By L. J. STOHLDRIER, Maintenance Supervisor, Monsanto Chemical Company, J. F. Queeny Plant, St. Louis, Mo.



to be immeasurably thin, exposes the bare metal to corrosive attack.

Until quite recently, flange connections in alloy piping have been made by attaching fabricated stub ends to the piping by one of several welding processes. This procedure is costly and the welded joint is subject to accelerated corrosion. A 2" schedule 40, type 304 stainless steel pipe connection consisting of two flared stub ends, two carbon steel back-up rings, 4 bolts, gasket

### Case 15—Missouri

#### Pipe Flanging Machine

IN THE chemical and process industries the screwed pipe connection is rapidly losing ground in favor of the flanged connection. This is especially true in places where corrosive conditions or product contamination demand the use of stainless steel or other alloy piping. It is believed that by cutting threads on the pipe the cutting tool removes the oxide film from the surface of the metal. Under certain conditions of service the removal of this film, which is said





and attached to the pipe ends by welding was costing approximately \$60.00.

### Costs Reduced

To reduce the high cost of such connection in stainless steel and other alloy piping, various flanging methods were investigated. A flanging machine was built in the plant shops consisting of a 10" hydraulic pressing cylinder and a 6" hydraulic pipe clamping cylinder. This unit uses a hydraulic pump capable of producing 3000 psi, and is powered by a 10 hp motor.

The hydraulic fluid used for actuating the cylinders is Monsanto's Pydraul F-9. By use of specially designed dies, the machine forms turned flanges directly on the ends of pipe, eliminating the necessity of using stub ends and welding. The forming is done without heat.

At the present time, flanged connections on schedule 40 stainless steel pipe are being made at a cost of \$9.00 per pair. The net saving is more than \$50.00 per connection. Techniques are being developed to use the machine on black iron pipe as well as alloy pipe.

By E. F. MEIER, Staff Engineer, Monsanto Chemical Company, J. F. Queeny Plant, St. Louis, Mo.

### Case 16—Mississippi

## Valve Controls on High Pressure Steam

ADDED to the long list of leading central stations and private plants which use motorized valve operators is the modern, new Delta Steam Plant of the Mississippi Power & Light Company located at Cleveland, Mississippi. This 200,000 kilowatt plant has installed many Walworth Valves with "LimiTorque" Operators on high pressure steam lines.

This remote control device permits one man to operate and know the status of each valve at a central push-button control station. This is an important safety factor, as men are not required to go to high,

low or dangerous locations for manual operation. Further, it automatically shuts off power should an obstruction occur in closing, thus protecting the valve parts. The valve is always operative electrically, yet operating personnel are always positively safe, as the hand-wheel is automatically disengaged when the valve is motor operated.

The valves are always seated tightly, because the seating thrust of the valve disc is accurately maintained in each closing cycle through a torque limiting mechanism.

LimiTorque is available for all makes and types of valves, and is adaptable to existing equipment. Actuation can be by any available power source—electricity, water, gas, oil or air.

### Case 17—North Carolina

## Unit Trapping

THE Wells-Oates Lumber Company of New Bern, N. C., recently purchased three of the most modern dry kilns in the area, complete with wet and dry bulb controls.

When an Armstrong representative suggested that the kiln drying cycle could be shortened by quicker warm-ups on all dry bulb temperature changes, B. H. Oates was willing to listen.

The idea of "unit trapping" the dry kiln coils, seemed logical to Mr. Oates. With one trap on each

of the four coils of the kiln, all coils would be properly purged of condensate and air, and it would be impossible for one coil to influence the operation of another coil.

Four No. 215 traps were installed on one of the three kilns on trial. This trial resulted in a decrease in cycle time from 72 hours to 66 hours, which increased kiln capacity more than 8%. Wells-Oates has ordered the traps for the remaining kilns.

Unit trapping, as the "something better" for American industry, is daily proving itself. Old equipment can often be rejuvenated and new equipment improved, as in the case above, by the use of proper trapping.

### Case 18—Texas

## Ball Joints Aid Truck Loading

THE American Liberty Oil Company at the Mt. Pleasant, Tex., Refinery was faced with the problem of loading a large number of trucks in as short a period of time as possible. The heavy asphalt varies in temperature from 250 to 450 F., and one piping system must be steam traced and insulated to prevent freezing or solidification of the asphalt.

The truck loading rack was designed with 4" loading lines, using 4" Style 7F-8F Barco Flexible Ball Joints to provide the necessary vertical movement to get the tail pipe in the truck hatch, and the necessary horizontal movement to eliminate the necessity of exactly positioning the truck. A steel cable with pulley and counter balance enables one man to maneuver the loading line into the truck hatch. As installed, the Ball Joint provides 30 degree movement in any direction. Steam jackets are used on the ball joints and valves in the insulated system.

The new expanded asphalt loading rack is loading over 60 asphalt trucks per day, filling a 5,000 gallon trailer in about 30 minutes.





Case 19—Texas Refinery

## Non-Corrosive Tubing

**T**HIS overhead bank of tubing lines, at McMurrey Refining Co., Tyler, Texas, is not adversely affected by outdoor air and industrial atmospheres

because the tubing is aluminum, connected with aluminum Triple-lok flare-type fittings, made by the Parker Appliance Co.

Case 20—Florida

## Tricky Liquid Level Control

**T**HE Florida Power Corporation of St. Petersburg, Fla., operates an eight-story office building as its main headquarters. The complete air conditioning system, which serves the entire building, requires large quantities of water for cooling purposes.

This water supply is derived from an artesian well having a pump under automatic control to supply an underground reservoir which in turn supplies the various units in the building.

Originally, two float switches were used to start and stop the

pump and to cut off the separate units should the water supply fail.

Because of the lack of reliability, it was decided to make a change. As H. K. Wilson of St. Petersburg was known to specialize in temperature, pressure and combustion controls, he was called on for suggestions. Being state representative for the United Electric Controls Co., he recommended the use of two pressure controls having the unusual accuracy and close differential of this make. One direct acting control and one reverse acting control were used, each attached to the top of a copper pipe with the lower end submerged in the water to get a pressure variation due to rise and fall of the water. This arrangement has been entirely successful.

Case 21—Texas

## Flexible Hose Lines

**A** TEXAS pipeline company, overhauling several closely related oil field gathering systems, replaced troublesome rigid piping on large pumping engines with Aeroquip Corporation hose lines. Oil filters on the engines were particularly critical and subject to damage, and all lines to these filters were replumbed with Aeroquip assemblies.

The superintendent of the main pumping station requested Aeroquip because of its neatness, flexibility, ease of installation, adaptability, and resistance to damage from vibration.



**BETTER PRODUCTION . . . . . in the South and Southwest**

## Section 3

# Power and Steam Supply

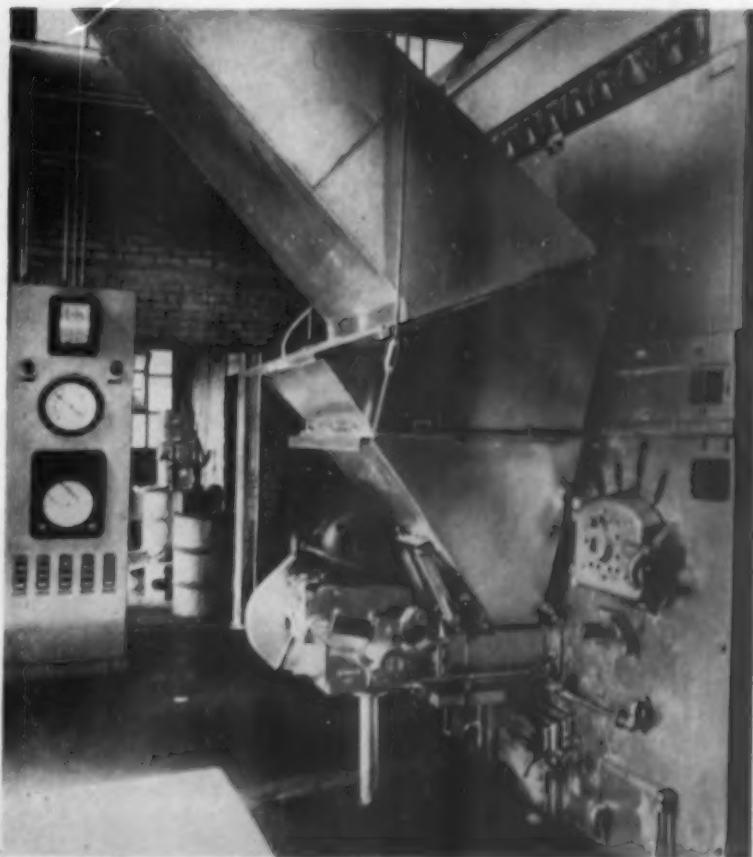
### Case 22—North Carolina

**R**ECENTLY the Scandinavia Belting Company of Charlotte, North Carolina, manufacturers of transmission, conveyor and elevator belting and automotive and industrial brake linings, realized that they had outgrown their two fire-box boilers as a source for their ever-increasing demand for steam. Fuel was handled manually and efficiency was low. And, since the boilers were overloaded, the steam pressure fluctuated and frequently wet steam was delivered to dryers in the plant. In general, conditions had become intolerable.

In selecting the new steam generating unit and controls to replace the old boilers, primary con-

Front angle view of firing aisle of the new steam generating plant of Scandinavia Belting Company shows the B & W boiler; underfeed stoker; coal storage hopper; and the panel-board containing a three-unit Bailey multipointer gage indicating forced draft, furnace draft, and uptake draft; a feed water pressure indicator; a Bailey steam pressure recorder-controller; and indicating type push button stations.

### Good Controls for Small Steam Plant



sideration was given to obtaining a dependable steam supply at a steady pressure and with fuel economy. As will be shown, through wise investment in instrumentation and controls, a great deal more has been obtained.

Although the present maximum steam demand is only 4600 lb/hr, the new plant includes a field-erected Babcock and Wilcox integral furnace water tube steam generator with Bailey Meter Company combustion controls and a Bailey thermo-hydraulic feedwater controller.

Stoker and forced draft inlet vanes are controlled by a Bailey steam pressure recorder-controller which maintains constant steam header pressure. Furnace draft is maintained by a Bailey furnace draft controller which operates the

uptake damper. The Bailey thermo-hydraulic feedwater regulator provides steady water level over a wide range of loads.

The Scandinavia Belting Company has realized the following benefits from the new plant:

1. Increased plant capacity 150% with ample reserve for load growth.

2. Reduced fuel costs 15%.

3. Increased plant process efficiency. Also, quality control is much easier to maintain with dry steam at steady pressure. Drying time on certain operations has been reduced.

4. Cut labor costs 70%. The sturdy, reliable instrumentation and control equipment requires only routine maintenance which can be handled by unskilled help, relieving highly skilled personnel

to concentrate on the important problem of sustaining maximum production to keep profit level high.

As a matter of fact, there is no fireman for this boiler. An attendant who does other work about the plant has the responsibility of checking on the boiler at regular intervals. A glance at the instruments on the control panel tells him what equipment is in operation and if the boiler is delivering rated pressure. Under normal conditions the total attention for all services, including ash removal, is only 2 hours per day.

These benefits dramatically illustrate the advantage in careful planning and selection of instruments and controls for smaller steam generating plants. What is more, these benefits will continue for many years to come.

#### Case 23—Texas Cement Plant

### Good Performance From Duafuel Engines

TWO dependable Nordberg Duafuel engines are carrying the base load for the big plant of the San Antonio Portland Cement Co., San Antonio, Texas. Utilizing inexpensive natural gas and a meager quantity of pilot oil, power generation is economical and reliable for this large installation.

As the company has expanded to meet the increased demand for its product, the power plant serving

the mill has kept pace. In 1948, a 3600 hp Duafuel engine was installed. The second unit of the two-engine, base load combination is a 7 cylinder, 21½ x 31, two-cycle, Nordberg, Duafuel engine, rated at 3010 bhp, which went into service in June, 1953. In 1914, a two-cylinder oil engine filled the bill, while today 8 engines totaling 14,750 horsepower are required.

The capacity of the plant is firm,

but with 6,610 horsepower in two engines, these engines must be available a large part of the time.

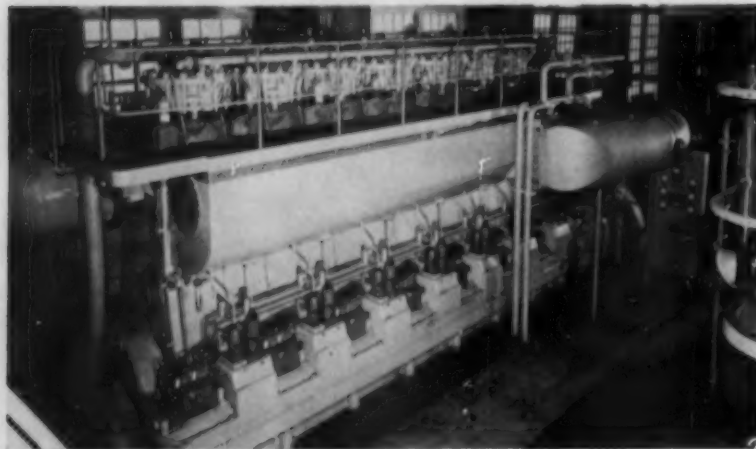
#### Performance Data

During the 12-month period ending in July, 1954, the two Nordberg engines compiled an enviable record for hours on the line. The 3,600 hp unit delivered 13,330,000 kwhs during 7,909 hours of service, representing actual operation 90.2 per cent of the time. For the same period, the smaller engine operated 6,149 hours and produced 9,195,000 kwhs.

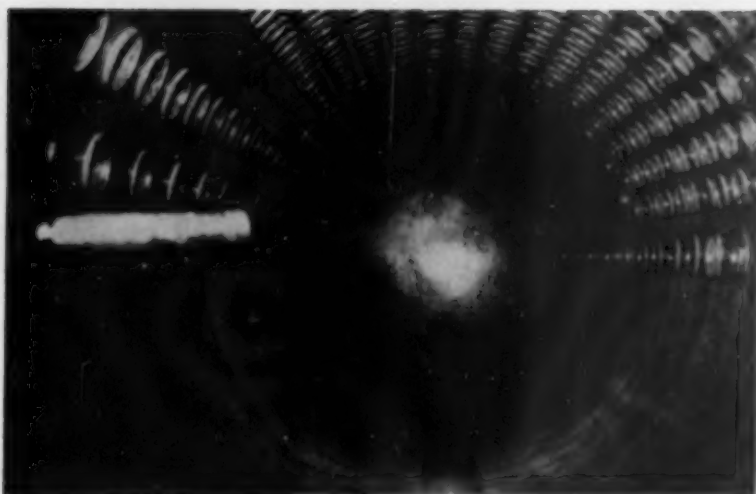
Natural gas, with a higher heating value averaging 1000 btu per cu ft, is supplied to the cement mill and power plant at 60 to 65 psig. Indicative of the cement mill's size is the fact that it is the largest single user of natural gas in San Antonio.

Tests have shown that the fuel flow is about 10.2 cu ft per kwh. For the 3,010 hp engine, the pilot oil flow averaged 6 gallons per hour. Using this figure for the 6,149 hours in the 12-month period previously discussed, when 9,195,000 kwhs were generated, the pilot oil consumption was a low 0.00402 gallons per kwh for an entire year. Combined with the 10.2 cu ft per kwh gas consumption, this adds up to efficient and economical power production.

Newest of the eight engines in the San Antonio Portland Cement Co. power plant is this modern 3010 hp Nordberg Duafuel engine. This plant supplies power for the cement mill and the workers' village.







Mud drum of boiler at Georgia Tech, as opened, after one year on line with Nalco treatment. No cleaning whatsoever required.

#### Case 24—Georgia Tech.

### Water Treatment Cuts Boiler Cleaning Costs

THE Georgia Institute of Technology solved the problem of scale in their boilers so well that they have virtually eliminated the need for prolonged time-consuming internal cleaning.

The Nalco System of Water Treatment is used in the central heating plant and is supplied in the form of chemical ball briquettes about 3 in. in diameter, which are dissolved in Nalco feeders.

Each boiler has its own feeder and is equipped with conventional indicating and recording meters. Chemical control tests have estab-

lished the fact that proper boiler water conditions can be maintained by adding one pound (one ball) each time a certain amount of feed-water is supplied. With this procedure the plant has been able to maintain sufficiently stable boiler water conditions, in spite of changing load conditions, with inexpensive chemical feeding equipment.

The results have been good. The accompanying photograph pictures the interior of the 60,000 lb/hr boiler mud drum immediately after opening for an annual inspection.

of the reports considerably delayed their distribution and hampered the overall efficiency of the operation.

Since changing to Ozalid in 1954, the technician logs the required data on forms printed on translucent paper and sends them directly to the Ozalid machine for immediate reproduction. Exact prints are available minutes after they are logged and are distributed without transcription or proofreading steps.

These errorless prints cost less than 2¢ per square foot to reproduce.

#### Case 25—Georgia

### Power Plant Records

A SAVING of \$1,664 per year, or 16 man hours a week, is reported by a powerhouse in Georgia which recently changed to Ozalid to copy meter records.

Because of the complexity of powerhouse operations, from 5 to 20 copies of daily, monthly, and permanent records are required for regular distribution. Previously, tedious recopying and proofreading

#### Case 26—Louisiana

### Thermostats Improve Engine Operation

AMOT thermostats have been applied to the jacket water lines of a Beaird Packaged Compressor unit owned by Arkansas Louisiana Gas Co. and installed at Sligo Field, southeast of Shreveport, La.

The compressor unit is manufactured by the J. B. Beaird Co. of Shreveport. The compressor is an Ingersoll-Rand Angle compressor, 400 hp. The Beaird Co. purchases the compressor units from the Ingersoll-Rand Company and mounts them on skids—applying the radiator, thermostats, filters, and other auxiliary equipment.

The thermostats are used for regulating the temperature of the jacket water on the engine and also the lubricating oil temperature. Before Amot thermostats were available, hand adjustable thermostats were used, and these thermostats were equipped with capillary tubes and bulbs which were gas filled, and

Model 3B Amot thermostat installed in the jacket water line. This thermostat causes the water to bypass the radiator until the jacket water comes up to temperature. Then as much water as needed is caused to circulate in the radiator to cool the engine to the correct temperature.



which were very fragile and subject to damage by vibration or even by the operator accidentally stepping on the tube.

Also, the adjustable types of thermostats were subject to tampering by the engine operator. Engine operators are prone to run engines cold, causing premature wear. However, with Amot thermostats tampering is impossible because there is no adjustment possible by the operator.

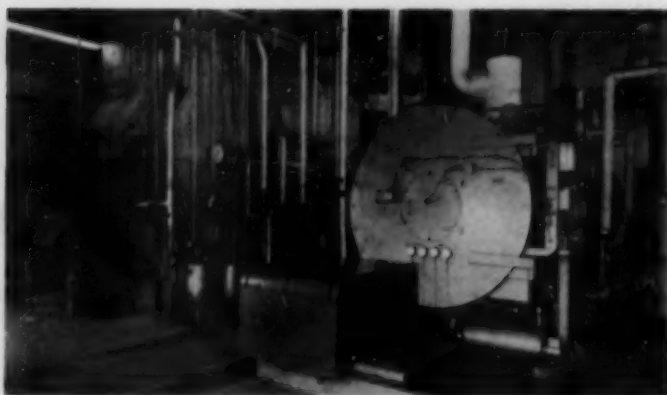
Each thermostat unit is set at the factory. The actuating force is caused by a wax-like material, and the composition of the material is different for each temperature setting. Therefore, the only way that the temperature can be changed is to change thermostat elements. This is possible only by taking the thermostat housing apart.

#### Case 27—Tennessee

### Wrought Iron Smokestacks

**H**ELPING to reduce maintenance expense created by corrosive flue gases are these smokestacks installed at the State of Tennessee's new central steam heating plant, Nashville, Tennessee.

The new stacks are fabricated of corrosion resistant  $\frac{1}{4}$ -in. wrought iron plate. Fly Ash Arrestor Corporation, Birmingham, handled the erection of the stacks. The new plant was designed by Architects Hart and McBryde, Nashville, with the specifications for the smokestacks being written by Engineer I. C. Thomasson, Nashville.



Case 28—North Carolina Hosiery Mill

### More Uniform Steam at Less Cost

**W**ITH plants at Charlotte and Shelby, N. C., Hudson Hosiery Co. is one of the outstanding manufacturers of women's hosiery in the South. It makes a nationally sold line of full-fashioned nylon hosiery.

Better production at reduced fuel costs has been achieved at the company's Oakhurst plant in Charlotte by the installation last February of a 200 hp packaged steam generator burning low-cost No. 6 fuel oil. The new equipment replaces a stoker-fired, coal-burning, water-tube boiler. Fuel savings are estimated at 20¢ per hour—\$1,752 per year.

The packaged steam generator (York-Shipley "Steam-Pak" SPH-200-6) was originally purchased for standby service, but it has taken over the primary load and is in operation for 24 hours a day, seven days a week. Besides heating the building, it supplies process steam for preboarding (pressing the hosiery to shape) and drying hosiery. Automatic operation, low fuel and maintenance costs and uniform steam pressure are among the advantages that have been secured by this installation.

#### Case 29—North Carolina

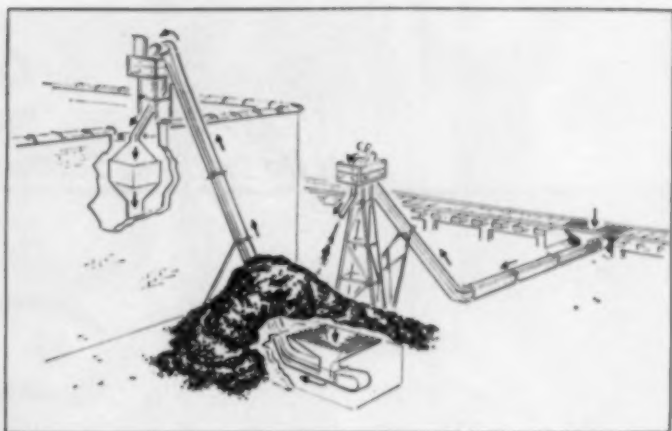
### "Open Air" Coal Handling and Storage

**T**AKING full advantage of moderate climatic conditions the Valdese Mfg. Co., manufacturers of knitting yarns, has installed an "open air" coal handling system at their Valdese, North Carolina, plant. Two horizontal-inclined Redler units (Stephens-Adamson Mfg. Co.) stockpile coal and deliver it to inside storage without benefit of housing, even on drive machinery. Principle coal storage is an open, outside pile.

From an elevated trestle, coal falls into a shallow track hopper from bottom dump cars. A 9-in. horizontal-inclined Redler unit is

choke fed through a rack and pinion gate under the hopper. Coal is moved horizontally for 39 ft before beginning a 36-ft slope run to a pivoting discharge chute which forms an open storage pile. The Redler handles coal at a rate of 20 tons per hour.

Coal is recovered from yard storage through a small hopper equipped with a rack and pinion gate to control the rate of flow to another choke fed horizontal-inclined Redler unit. After a short horizontal run, the Redler takes coal up a 60-ft slope run to the top of the boiler house. Here



coal is chuted to an inside storage bunker from which it passes by gravity to the boiler stoker hopper. A heavy duty Tellevel bin level control located in the inside storage bunker cuts off the Redler conveyor when the bunker is filled.

Since Redler casings form rigid structural members when assembled, they allow for minimum use of supporting framework. At Valdese only light diagonal A-frames are required in addition to the supporting structure for drive machinery.

Dusting is eliminated by the sealed Redler casings, except at open discharge points. Use of Saco speed reducers on the drives minimizes space requirements and simplifies supporting structure since motors are mounted directly over the reducer.

Double leg design on Redlers at feed points allows coal to enter the conveyor-elevators through the open side of the C-shaped carrying flights. Even larger lumps flow freely into the units without danger of jamming.

clude the analytical and size requirements insuring the receipt of coal at the plant that will produce the most heat and/or power per dollar when used in the equipment for which it is purchased.

Inadequate consideration of factors involved in the selection of coal used in many installations results in inefficient, troublesome and costly performance. It is highly important, therefore, that the coal requirements of individual plants be more thoroughly studied and determined than is the general practice today.

Second, the specifying and purchasing of coal should be regarded as an engineering project, to be performed by personnel highly qualified in the field of combustion and with a thorough knowledge of the various coal fields and the characteristics of the coal in these fields.

Third, additional fuel savings can be effected by knowledge

gained from an engineering study of the utilization of coal in the individual plant. Such a study should give special attention to:

1. Method of receiving and storing coal.
2. Method of reclaiming coal from storage.
3. Coal handling system inside the plant, including training of personnel.
4. Burning equipment, boilers and auxiliaries.
5. Over-all operation and maintenance requirements.
6. Load characteristics.
7. Air pollution control.

With information on these factors available, the specifications for coal and for coal and ash handling equipment can be drafted which will give consideration to the minimum cost for unloading, storing and handling from the car or storage pile to the boilers; trouble-free performance in the firing equipment; realistic size and analytical specifications for coal that are economically available to the plant, and which will meet all requirements to a satisfactory degree.

In short, the policy recommended to the Navy will assure the coal most suitable for the equipment of a given plant, the coal most economically available, and the coal that will burn most efficiently to give the maximum power and/or heat per dollar. It will also demonstrate beyond doubt that the cheapest cost per ton of coal is not always the cheapest in over-all steam producing cost.

In a letter to BCR Products, Inc., the Navy's Bureau of Yards and Docks says that as a result of the survey the Navy considers that it is now able to purchase coal of lower cost and greater suitability for the equipment involved. The Navy said that it expected further savings to the Government resulting from recommendations regarding modifications to coal handling storage and firing equipment at certain installations, along with potential improvements in operating and maintenance procedure.

By C. A. REED, Director, Department of Engineering, National Coal Association.

#### Case 30—Coal

### Survey Cuts Navy Coal Bill

A STUDY for the Department of the Navy has just been completed by BCR Products, Inc., affiliated with National Coal Association, on requirements of Navy installations using coal. Many of these bases are located in Southern states.

Although it is impossible at this time to reveal any details about specific plants, the study has yielded several important principles on installation, modernization and coal-purchasing policies which the Navy says will help it considerably and which should prove profitable and beneficial to industry generally.

First, substantial savings in the fuel bill can be achieved in more careful purchasing. Purchase specifications for coal should in-



## Section 4

# Materials Handling

Case 31—Missouri Manufacturer

### Flexible Handling of Machined Parts

A MISSOURI manufacturer had the problem of handling fuse ends for 75- and 155-mm shells. The fuses had to be trimmed, drilled, tapped, bored, and delivered to inspection in that sequence. It looked like an overhead conveying job, and the manufacturer settled on Chainveyor—a comparatively new, low

cost overhead conveyor—because of the many advantages it offered in the solution of their problem.

#### Continuous Production

With Track and Chain weighing  $3\frac{1}{2}$  pounds per foot, but with a capacity of carrying a pay load of 60 pounds per foot, it was the only

conveyor with the 16 in. radius curves necessary to negotiate the vertical inclines and declines in the distances existing between the automatics and other machine tools and thereby provide consecutive operations and continuous production with no intermediate handling.

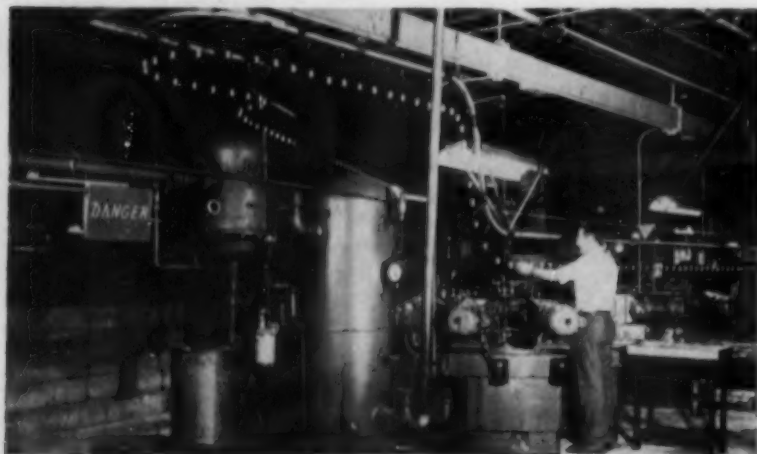
In addition to its flexibility and other advantages, Chainveyor (Chainveyor Corporation) was much less expensive to buy and to install.  $1\frac{1}{2}$  in. O.D. tubular steel track with  $3/16$  in. open slot completely encloses chain. All curves and moving parts are heat treated to provide strength with flexibility and light weight.

The system involves 335 ft of track, 484 ft of chain, and 62 curves—forty-nine 90 degree and thirteen 180 degree. Because of the length of the system and the number of curves involved, two drives, equipped with fluid couplings, were applied. The conveyor runs from 5 to 15 feet per minute.

The results have been excellent. There has been a substantial increase in production, and congestion and confusion created by the use of parts baskets have been eliminated. Each operator handles about one ton less of weight per man per day than under previous conditions.

Workmanship has improved, since

This view shows the simple, spring loaded takeup of the system—also, the lightness of supports necessary to suspend the system from the roof. Complete system is 484 feet long.







# CARRYOVER

spoiled 50,000 yards of cloth

A costly problem faced the Drew field engineer, when he called on a major Eastern textile mill. This serious situation was solved effectively and at low cost.

The Drew man, an experienced industrial water expert, thoroughly surveyed the boiler plant and operating conditions. He collected a complete set of pertinent water samples, which were studied in the modern Drew laboratories. All data was correlated, and antifoam—ORGANIC "U-14-L", decided upon, along with other treating chemicals. In less than 24 hours after Drew treatment was started, foaming—the cause of carry-over, was ended; the staggering costs of spoiled cloth and lost man hours, eliminated!

Why not invite your Drew area engineer to discuss your industrial water problems? Meanwhile, write for a copy of "Complete Boiler Water Conditioning"—it's free.

Power Chemicals Division

**E. F. DREW & CO., INC.**

15 East 26th Street, New York 10, New York

SAN FRANCISCO • CHICAGO • PHILADELPHIA • BOSTON • DALLAS • ASHEVILLE, N.C.  
AJAX, ONTARIO



Service throughout the United States, Canada and South America

SOUTHERN POWER & INDUSTRY for OCTOBER, 1955

each operator concentrates entirely on performing his particular job well rather than upon getting the right materials to his machine and away from it. This is an excellent example of the continuous-flow principle of handling materials and demonstrates the value of getting materials to processing machines and away from them in smooth, orderly fashion.

#### Case 32—Georgia

### Tramrail Cranes Up Production 300%

**I**N Atlanta, Ga., the W. C. Caye & Company is a good example of what an aggressive company can accomplish with the help of Tramrail equipment. This company buys reinforcing rod, cuts it up to various lengths and bends it for concrete reinforcing.

For about 15 years, the rods were handled by hand. Then, when a new building was erected, it was equipped with Cleveland Tramrail cranes, which handle the rods directly from railroad cars to storage, thence through cut-off and bending machines, and on to outgoing delivery trucks.

Whereas eight men were required to work 8 hours to unload a 50 ton car of rods in the old building, two men using Tramrail cranes now can do the job in the new building in 30 minutes. The Tramrail equipment has enabled Caye to double production and yet reduce man-hours by one-half. In other words, their production per man hour is four times what it formerly was. The savings have been so great that the entire Tramrail system was paid for in the first six months of operation.

The Caye Company presently cuts and forms about 30 tons of steel rod in an eight-hour day.



Cleveland Tramrail 5-ton crane quickly handles bundles of rod from storage to shear.

#### Case 33—Georgia Paper Mill

**T**HE South claims another world's first — a log stacker 300 feet long, rising 80 feet in the air at the discharge end. It carries pulp wood to storage at the Rome Kraft Co. Mill, Rome, Georgia, and it can

### Largest Log Stacker

store 30,000 cords of wood. The movable end travels on a track in a 172 degree arc for approximately 570 feet. Logs are removed from the storage area through the flumes shown extending from left foreground.

Photo courtesy JERVIS B. WEBB COMPANY



• A 78 - YEAR OLD QUALITY NAME IN VALVES •

# KENNEDY

*Now* a brand new warehouse  
serving the industrial south  
**SOUTHERN BONDED WAREHOUSE**

367 JOHN STREET N. W. • ATLANTA 2, GEORGIA

TELEPHONE LAMAR 3421

with an outstanding line of



VALVES, HYDRANTS, ACCESSORIES



## BRASS VALVES

IN SIZES

$\frac{3}{8}$ " thru 3"

Gate — Globe  
and Angle —  
including "500  
Brinell" Stainless  
Steel Disc and  
Seat.



## IRON-BODY VALVES

IN SIZES

2" thru 48"

Double Disc —  
Solid Wedge —  
Globe and Angle



## A.W.W.A. VALVES

IN SIZES

3" thru 48"

Double Disc  
with Hook-and  
Wedge Type  
Mechanism for  
long, easy ser-  
vice life.



## FIRE HYDRANTS

### SAFETOP

Two-piece standpipe and  
stem. Patented Safety Break-  
able traffic model.

### STANDARD

One-piece standpipe and  
stem suitable for installation  
in protected areas.



## UNDERWRITERS'- APPROVED VALVES

IN SIZES

2½" thru 14"

Conforming to specifications  
known as "National Standard" and  
approved for use in fire protection  
systems by the Underwriters'  
Laboratories and The Factory  
Mutual Fire Insurance Companies.

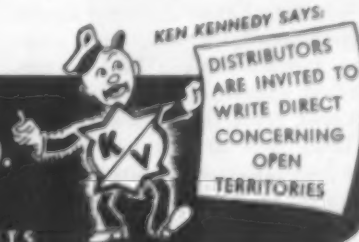


THE  
**KENNEDY VALVE MFG. CO.**

ELMIRA, N. Y., U. S. A.

• VALVES • PIPE FITTINGS • FIRE HYDRANTS

OFFICE AND WAREHOUSES IN NEW YORK, CHICAGO, SAN FRANCISCO, ATLANTA. SALES REPRESENTATIVES IN PRINCIPAL CITIES.





Flow scheme of overall process is diagrammatically laid out on panel control board. Lights show which valve is open, which material is feeding.

#### Case 34—Louisiana

### Load-Cell System Controls Blending

THE Naugatuck Chemical Division of United States Rubber Co. has put a new latex blending operation on stream at its new Kralastic manufacturing plant at Baton Rouge, La. An unusual feature of this operation, which automatically blends up to six liquid products, is the use of load cells.

Load cells, load sensitive devices or strain gage transducers as they are sometimes called, indicate changes in weight as changes in electrical current. They operate on the principle that deformations in the physical structure of an electrical conductor change its electric resistivity.

#### Process Data

In the Naugatuck blending operation, resin latices and other liquids are automatically taken from storage tanks, weighed out in prescribed quantities, mixed and discharged from the system.

Load cells are located beneath the four tanks, three cells per tank. In this system, which was designed by Richardson Scale Co., weights are indicated and recorded on an

instrument located at a remote panel control board. Individual feeding and weighing operations are controlled by an operator at the control board. The cycle of operations is so sequenced and interlocked that after the operator selects his weights, no mistakes can be made.

Three of the four tanks are equipped with agitators and are used for mixing as well as weighing. With this arrangement, production of latex blends is virtually continuous. While one of the weigh-mix tanks is being filled, one may be emptying, and the other being cleaned and scrubbed down.

Advantages of the blending system including central process control, minimum labor requirements (one operator runs entire process), good flexibility, high output and good weighing accuracy. Accuracies, for example, are considerably higher than in metering-type liquid

blending processes, and the degree of control is as great as in the most advanced type of present-day solids blending processes.

All feeding cycles are initiated by push buttons located on the control board, and pilot lights inform the operator when each feeding step is completed. Weight-selector dials are located on the little silhouettes of the five storage tanks. To make up a formula, the operator merely dials in the prescribed weights.

A strip chart recorder, located on the panel, has a 200 graduation scale. When recording weight in the 10 ton tanks, it reads to the nearest 100 lb. When recording for the one-ton tank, it reads to the nearest 10 lb. Specially designed, this instrument has been built to work with four weighing sources (3 weigh-mix tanks and the one weigh tank) instead of one source, as is customary.

#### Case 35—North Carolina

### Towveyors Save 3 Cents Per CWT

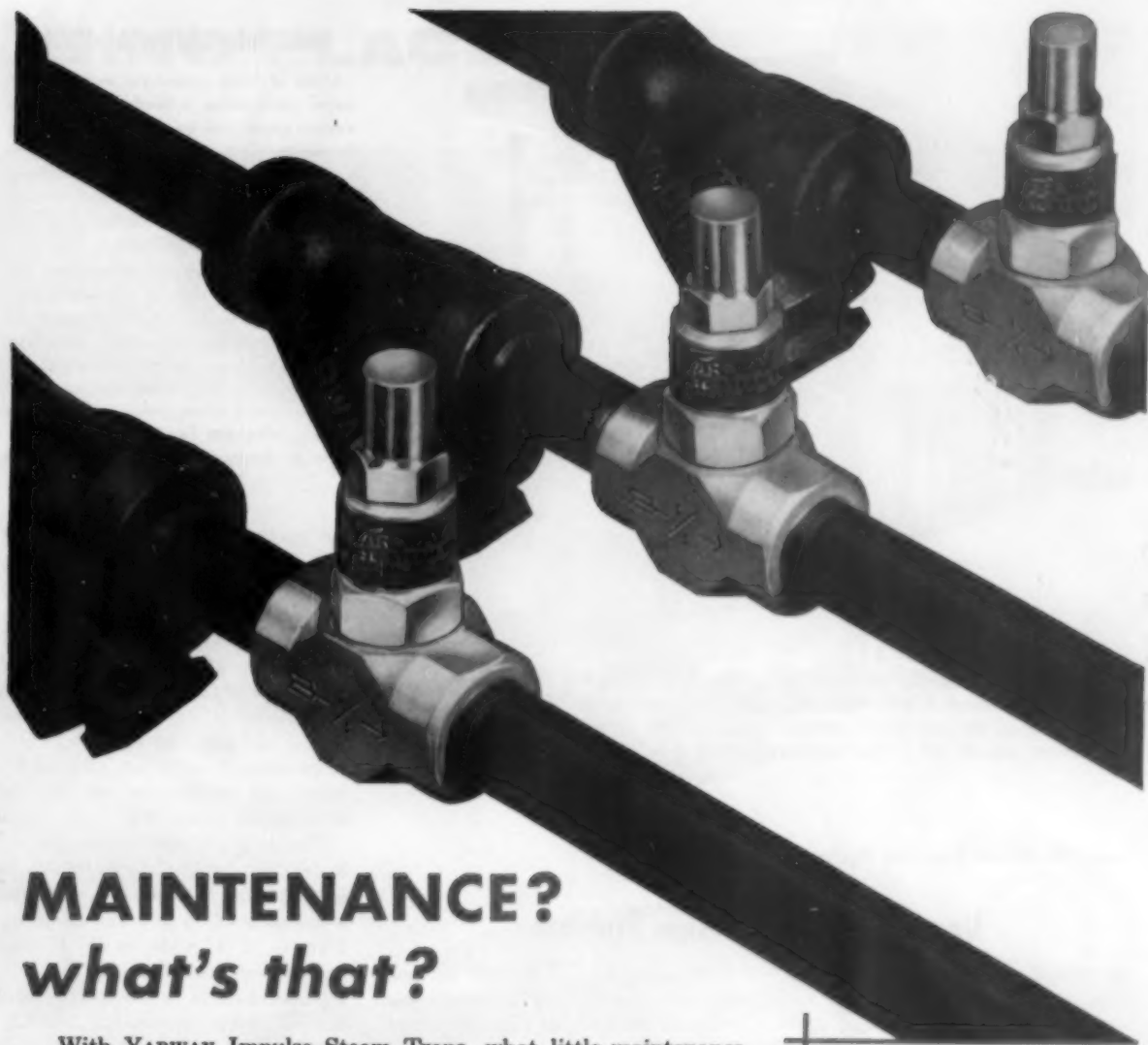
BACK in 1953, Great Southern Trucking Company was so impressed with the trend toward mechanization of truck terminals and the advantages gained that they decided to install a Webb Towveyor at their Charlotte terminal.

The results of the straight line, uniform method of handling were so successful that they have since installed five more Towveyors at their Atlanta, Birmingham, Jackson, Tampa, and Miami terminals.

The total footage is approximately 3700 ft, and the total miscellaneous merchandise handled per week is 44 million lb. Direct savings average three cents per hundredweight. Secondary advantages, while not so spectacular as the savings per hundredweight, are extremely important; they include much lower damage, easier supervision, greater safety and higher morale among employees, and hence less manpower turnover. These are of considerable importance in the overall functioning of the terminals.







## MAINTENANCE? what's that?

With YARWAY Impulse Steam Traps, what little maintenance there is can be handled in a jiffy. There's only one moving part—a tiny valve.

When the trap must be cleaned or repaired, it can be done right in the line—in a matter of minutes.

Other YARWAY features:

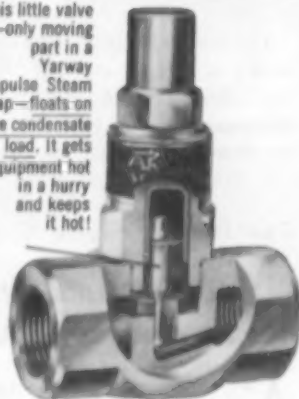
- Stainless steel—body and internal parts.
- Gets equipment hot in a hurry—and keeps it hot.
- Good for all pressures without change of valve or seat.
- Easy installation—small size, light weight.
- Non-freezing at low temperatures.
- Six standard sizes, 1/2" to 2".

Want proof of performance? Try a YARWAY Impulse Trap and Fine Screen Strainer FREE for 90 days in your own plant. For free trial or free catalog, write . . .

**YARNALL-WARING COMPANY**, Home Office: 116 Mermaid Avenue, Phila. 18, Pa.

*Southern Representative: ROGER A. MARTIN, Bona Allen Building, Atlanta 3, Ga.*

This little valve—only moving part in a YARWAY Impulse Steam Trap—floats on the condensate load. It gets equipment hot in a hurry and keeps it hot!



# YARWAY

## impulse steam trap

OVER 1,000,000 YARWAY IMPULSE TRAPS SOLD—  
STOCKED BY 270 CONVENIENT  
INDUSTRIAL DISTRIBUTORS



This view shows the elevator car at the top of its trip, floor automatically leveled with the roof, and gates rolled up. Some detail of the guide rails which extend themselves to support the car as it comes almost out of the hoistway to roof level can be seen.

#### Case 36—North Carolina Factory

### Unusual Elevator Design Problem

**T**HE Monarch Elevator Co. of Greensboro, N. C., claims their willingness to tackle unusual problems is one of their greatest sales assets.

The accompanying illustration shows a unique elevator installation. Its purpose was to bring equipment to the roof for testing at Western Electric Company at

Burlington, N. C. The most obvious elevator engineering dilemma was the lack of building superstructure above the roof level to support the car guide rails.

Another problem was a weather proof hoistway cover. The way it was worked out, the elevator car acts much the same way as a workman who uses his head to lift

### More Information Available

Many of these procedures and improvements, plant tested in Southern and Southwestern plants, can be put to work towards increasing production in your own plant. Case studies are necessarily brief. Emphasis is concentrated on direct information—need and objectives, description of improvements, and results.

To assist you in putting these ideas and methods to work, equipment manufacturers are identified in the articles. If additional information is desired, contact your local mill supply house, the manufacturer's representative in your area, the equipment manufacturer's headquarters, or write The Editors, SP&I, 806 Peachtree St., N.E., Atlanta 5, Georgia. There is no obligation.

the manhole cover as he emerges onto the street from underground. The cover is firmly latched in place to the roof while the car is below, and as the car travels to the roof level, it unlatches from the roof and without being unattached to one or the other, becomes latched to the car top. In this way, this large steel cover is not affected by winds and the elevator can be used in all types of weather.

These units are Monarch's oil hydraulic freight type elevators with 15,000 lb capacity, traveling a distance of 35 ft. The car platform is 12' 4" wide by 35' 4" deep and has vertical clearance of 14 ft. Its operation is by automatic push button with automatic leveling. Gates are electrically operated roll-up type. It also features selective operation of the opposite gates and doors. Two sets of "jumbo" (30 lb) rails guide cars in their travel and dual counterweights counterbalance the dead weight of the car.

#### Case 37—West Virginia

### Pallet-Fork-Truck System for Handling Ferro-Alloys

**A**N innovation of Vanadium Corporation of America's new plant in Graham, West Virginia, is the shipping of ferro-alloys in unit pallet loads rather than in traditional bulk shipments.

Vanadium's Graham ships Divi-

sion ships this material in (1) non-returnable wooden pallet boxes (2) steel drums steel strapped to disposable pallets (3) bags steel-strapped to disposable pallets (4) large steel drop-bottom containers having a capacity of 14,000 lb each and (5) in bulk carload shipments. The advantage of making available this variety of shipping methods is to meet the various requirements of every type of consumer both large and small.

Although the cost of palletized ferro-alloy is slightly higher initially because of the additional cost of the pallet container, this is generally offset at the consumer's plant by permitting more rapid unloading, more efficient storage, easier identification of the contents of the pallet containers and better inventory of material on hand.

On an average, stowing of pallet containers in outgoing carriers requires approximately one

**GOING PLACES** *in the roaring jets  
with Cities Service...*



The gargantuan, ever-growing thirst of the military jet planes was slaked last year by 124,000,000 gallons of Cities Service jet fuels. Cities Service refineries are geared to provide increasing quantities of vital defense matériel.

**CITIES  SERVICE**  
*A Growth Company*



industrial - truck - hour per car load. One and one-half industrial-truck hours are required to stow approximately the same volume of material in bulk form.

The entire operation of han-

dling material from casting floor through processing, finished storage and shipping is dependent on four 6000-lb fork-lift trucks. These are powered by 30-cell D8 Edison Nickel-Iron-Alkaline Storage Batteries of 600 ampere-hour capacity.

Trucks and batteries are serviced and batteries are charged in the plant's maintenance department, a corner of which is equipped with a motor-generator and suitable controls for charging the batteries. Solution height of the batteries is checked daily and distilled water, obtained from the plant laboratory, is added as needed by means of the Edison Electric Filling Outfit.

The system is built to handle a capacity of 120 tons of oysters per hour, and two boats may be unloaded at one time.

Equipment installed includes belt conveyors, both portable and stationary; apron conveyors; shuttle belt conveyors; and scraper conveyors. The latter are employed to carry away refuse.

To build such a system, special

consideration had to be given to various factors. Excessive shock causes oysters to spoil. Therefore, all transfer points were designed so that the oysters would receive a minimum of shock. At the dockside, it was necessary that the equipment be made flexible enough to cope with both high and low tide, and a variety of boat sizes. This was accomplished by using portable belt conveyors that discharged to hinged apron conveyors which pivot at the head end. The lower ends of these conveyors may be raised or lowered depending upon conditions.

The shuttle belt conveyors add further flexibility to the system, permitting extra storage and working space. They operate on an overhead track, and deliver the oysters where and when needed.

The entire system has substantially reduced the number of handling personnel, permitting them to be employed in a more productive manner.

#### Case 39—Kentucky

### Gain in Storage

**I**N Tube Turns' plant, Louisville, Ky., the capacity of the warehouse for active stock has been increased a third without new construction. This was made possible by an unusual shelving arrangement that effectively utilizes cubical space.

The shelves are suspended between reinforced steel beams, which supplement the existing rafters. The hangers, fabricated of 2" x 2" x 3/16" structural steel channels welded into position are designed to reduce center deflection. Each set of hangers holds two 2'6" x 10" x 2" shelves built of No. 1 white pine and capable of bearing a load of 75 pounds per square foot. The top shelf rises 16" above the bottom one.

Planks are spaced 3/4" apart so that the sprinkling system can operate satisfactorily in the event of fire. The shelves are 33" above the second floor level, permitting large fittings to be conveniently stored beneath them. Aisles are 30" wide and terminate at lanes sufficiently broad to accommodate small ma-

#### Case 38—Virginia

### Minimum Shock for Oysters

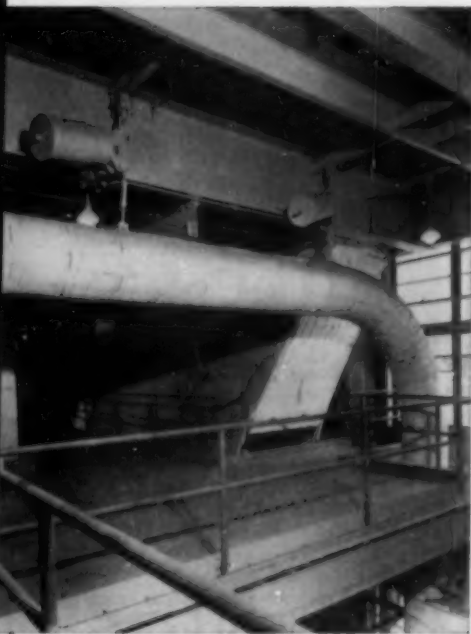
**A** COMPLETE handling system for unloading oyster boats and conveying the oysters to shucking tables has been designed and installed at the Ballard Fish and Oyster Company of Norfolk, Va., by The Jeffrey Manufacturing Co.







## At the new Shawville Station of Pennsylvania Electric Co. it's **NAVCO** Piping throughout



*This station, having an initial capability of 276,000 kw, was designed and erection supervised by Gilbert Associates, Inc., Reading, Pennsylvania. It is one of the most efficient and low-cost stations in the country.*

Over 37 miles of pipe were installed by Navco in this highly efficient reheat station and all necessary prefabricated assemblies, in excess of 2,000,000 lbs., were produced in Navco shops. For field welding only, more than 15 tons of electrodes were used.

The photo above shows one of the bends required for the Main Steam. It is 16" O.D. forged and bored with a wall thickness of 3.084" and weighs 5½ tons. Material is ASTM A-335 P-22—2¼% Chrome. Operating conditions are 1850 psi at 1050°F. ini-

tial, with 1000°F. reheat.

The photo at the left shows this bend in service supported by dependable Navco Counterpoise Hangers.

In the past three years alone, Navco Piping has been installed in Central Stations generating in excess of 4,000,000 kw.

Next time you have a Piping job requiring reliability in performance and careful attention to every small detail, Navco will welcome the opportunity of quoting you.

Call, wire or write today!



### NATIONAL VALVE & MANUFACTURING COMPANY

3106 LIBERTY AVENUE, PITTSBURGH 1, PENNSYLVANIA

New York • Chicago • Cleveland • Boston • Atlanta • Buffalo • Cincinnati



materials handling equipment.

The plant's warehouse for active stock is adjacent to the order make up area which, in turn, is adjacent to the truck dock and close to the rail siding. It is used for storing most catalog items through 24", and its stock is replenished as needed from the company's main warehouses.

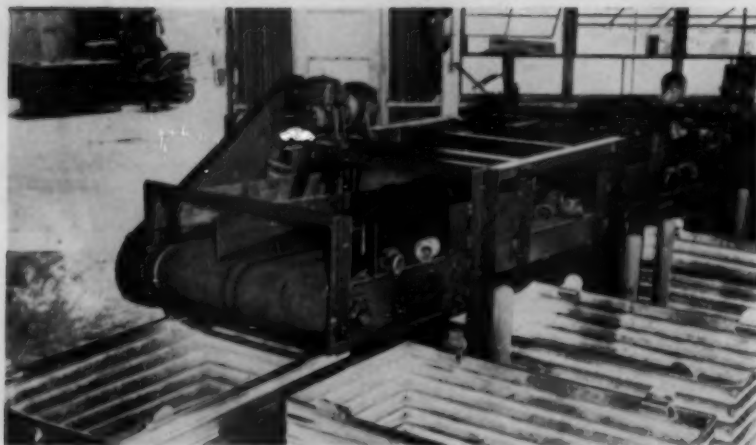
Those who are pressed for storage space may wish to consider a similar arrangement of suspended shelves, where ceiling structures have adequate strength or can be economically reinforced.

#### Case 40—Kentucky

### Selector Type Conveyor

EVERY piece of equipment in Tube Turns' plant, Louisville, Ky., is a "defender." That is, its performance must be equal to, or surpass, the performance of newer equipment labeled the "challenger." Should a painstaking study reveal that the "defender" has become partially or wholly obsolete, it is given a standby role or discarded altogether, and the "challenger," or superior equipment, is bought and installed.

The defender-challenger method of making evaluations, which also takes into account economics, is applied to procedures as well as manufacturing facilities. The result is that Tube Turns' plant progresses from one peak of efficiency to another, as technological advances are made.



The recent installation of a selector type conveyor represented a victory by a "challenger" over a "defender." Here, a manual procedure for segregating fittings by size, type and weight was the "defender" that lost out.

The new selector conveyor receives the fittings immediately after Tube Turns' familiar identification

tag has been spot welded to them. It delivers the fittings, via six lanes, to the proper mobile bins for transportation to the painting department. The new method of segregating fittings reduces fatiguing manual labor, eliminates the shifting of skids, speeds up the operation, and assists in keeping production schedules on the nose.

#### Case 41—Louisiana

### Manlifts Speed Job

IT STARTED during the Korean War. Higgins, Inc., the famous New Orleans shipyard, received a rush order from the US Navy for 10 giant minesweepers of an extremely radical nature; they had to be non-magnetic. This called for engineering ingenuity of the highest caliber, as well as for production skill, efficiency and above all, speed.

Once the massive, 175 ft, laminated wood hulls (some sections, such as the keels, made up of over 30 separate planks bonded together under heat and pressure until they became pound for pound stronger than steel) began to rise, the problem of getting workers topside and down again, many times during the working day, became acute.

Taking a leaf from the auto parking structures, Higgins production men recommended using power manlifts for vertical transportation. A number of these were made in the Higgins machine shop. Inestimable time in manhours was saved. The Navy got its minesweepers on time.



Hull construction inside bay at Higgins, Inc., showing manlift at stern.

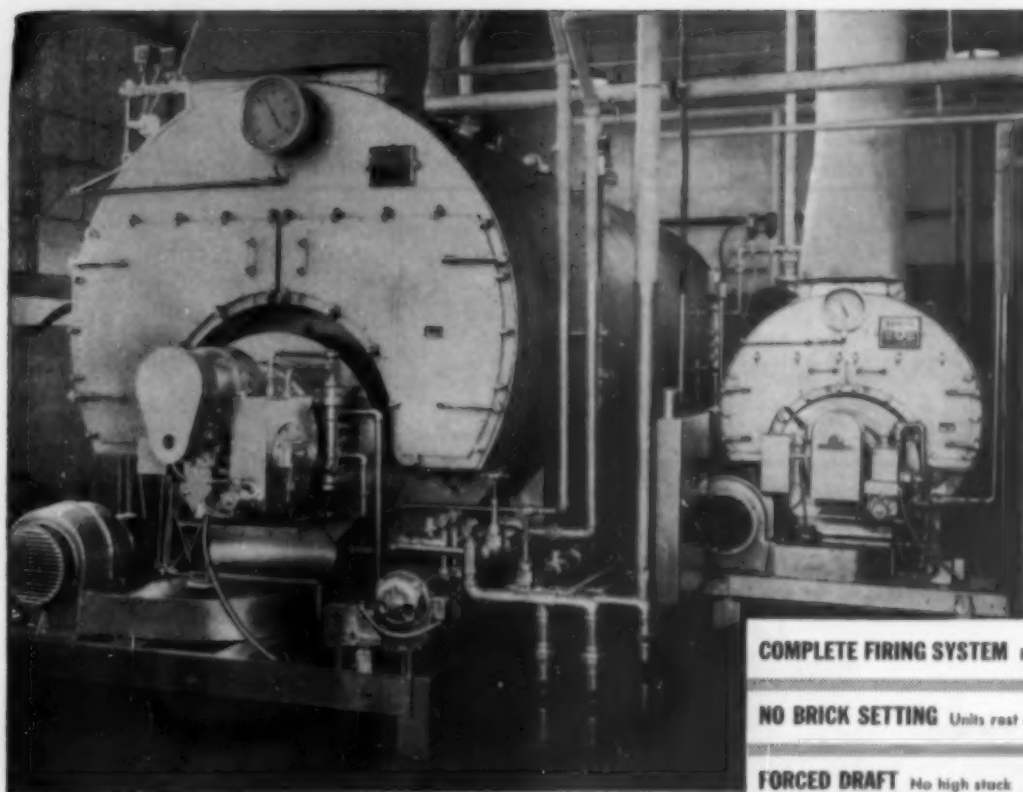
## KEEP UP TO DATE

Ideas

Methods

Equipment

See Pages 16-19



Boiler room, Bendix-Skinner Division of Bendix Aviation, Detroit. Iron Fireman firing equipment installed by Comb & Groves, Giffels & Vallet, Inc., Consulting Engineers.

## A modern steam plant

*Integrated boiler burner units, with  
Iron Fireman forced draft firing*

Iron Fireman-Kewanee boiler-burner units illustrated above are installed in the Bendix-Skinner (Division of Bendix Aviation) boiler plant, Detroit, Michigan. Burners and boilers were engineered together, as one unit. These complete boiler-burner units require only four field connections to put them in service—fuel, water, steam, and electricity. All components, including the entire electrical control system, are assembled at the factory.

### Factory Engineered

Such a thoroughly engineered unit has many advantages for the owner beyond its inherent efficiency. Factory responsibility covers the entire job, with no separate contracts for boiler setting, boiler refrac-

tory, wiring, oil heating system, automatic control system, or forced draft air supply.

The rated capacity of these boiler-burner units (for either high or low pressure steam) allows an ample margin which can easily carry overloads of 50% or more. In other words, the normal rated load is carried without strain. This means low maintenance costs, and long life for both the firing unit and boiler. Steam pressure is steady, regardless of extreme load fluctuation. Five to one turn down ratio on firing unit offers a wide range for modulating fire control.

### Burn oil or gas or combination gas-oil

With the dual-fuel burner you can burn either gas or oil, and switch from one fuel

to another at a moment's notice. Or you can install either the oil burner or the gas burner, if you prefer to use one fuel exclusively. The Iron Fireman Oil Volumeter enables you to burn any grade of oil, from kerosene to the heaviest industrial, without special adjustment.

### Add firing unit to your present boiler

The Iron Fireman forced draft firing system is a complete package in itself. It can be installed in practically any type of boiler with a minimum of on-the-job assembly.

### Send for further information

Mail the coupon for detailed description of the Iron Fireman forced draft firing unit, or get in touch with your Iron Fireman dealer.

**COMPLETE FIRING SYSTEM** Factory Engineered

**NO BRICK SETTING** Units rest on floor

**FORCED DRAFT** No high stack

**CONTROL PANEL** Factory wired, tested

**HIGH EFFICIENCY RATING** Low fuel cost

**FACTORY RESPONSIBILITY** All components factory assembled

# Iron Fireman®

AUTOMATIC FIRING EQUIPMENT  
FOR GAS, OIL, COAL



IRON FIREMAN MANUFACTURING CO.  
1052 W. 106th Street, Cleveland 11, Ohio.

In Canada, write to 80 Ward Street, Toronto, Ontario.

Please send detailed information on Iron Fireman forced draft firing units for oil, gas and combination gas-oil firing.

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_



## Section 5

# Maintenance Procedures

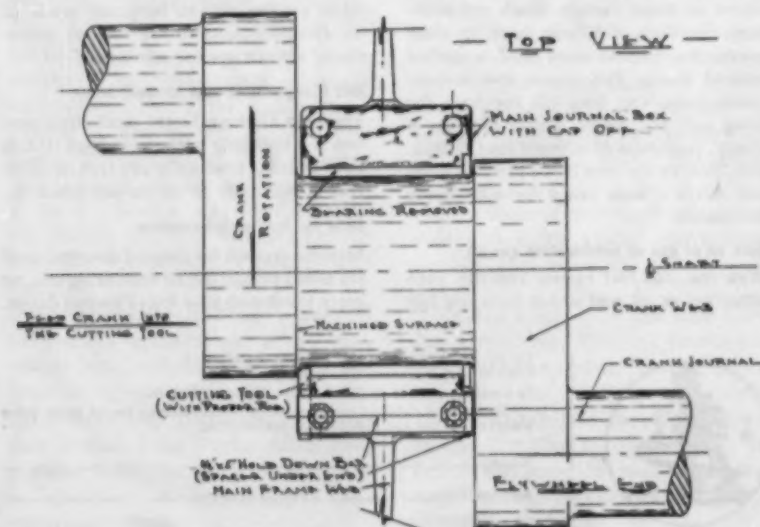
Case 42—Texas Chemical Plant

### Crankshaft Machined While in Place

**R**EMACHINING without disassembling — that's the trick pulled off recently by the maintenance department of Carbide and Carbon Chemicals Company in Texas City, Texas.

Recently, one of the thrust journal faces on the crankshaft of a 1000 hp "V" type gas engine driven compressor was damaged

and scored when the thrust bearing failed. It was necessary to re-machine this crankshaft thrust face. Since there would be a considerable amount of time and money involved in removing the shaft from the engine and machining it in a lathe, it was decided to machine the crankshaft in place without disassembling the engine.



A screw jack was made to reach from the flywheel of the engine undergoing repairs to an adjacent engine. This jack was installed and was used to move the crankshaft until all thrust clearance between the crankshaft and the bearing was eliminated. The oil pump of the engine was then removed, exposing the other end of the crankshaft. Another jack was made for that end of the engine using a "strong-back," which was bolted to the engine frame. This "strong-back" was drilled and tapped for a  $\frac{5}{8}$ " NF-thd. cap screw which was to be used for feeding the crankshaft into the cutting tool.

The main thrust bearing insert was then removed and a  $\frac{5}{8}$ " form-ground tool was clamped solidly to the main frame between two pieces of  $\frac{1}{2}$ " x 2" ground flat bar, using the main bearing hold down bolts. This is shown in the sketch below. The tool was set against the thrust face to be machined, then as the crankshaft was rotated slowly by using an overhead crane attached to the rim of the flywheel (to eliminate any thrust loads), the crankshaft was slowly fed into the tool. This was done by loosening the jack on the flywheel end and tight-



The following list is  
typical of the process  
industries served by

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STEAM  
GENERATORS**

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ARTIFICIAL LEATHER  
CEMENT  
CERAMICS  
CHEMICALS  
COAL TAR PRODUCTS  
ELECTRODES  
FOOD PRODUCTS  
GLASS  
LINOLEUM  
PAINT AND VARNISH  
PETROLEUM  
PROVISIONS  
PULP and PAPER  
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SUGAR REFINING  
VEGETABLE and  
MINERAL OILS  
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WOOD CHEMICALS



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and for pressures to 250 p.s.i.  
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today for Catalog 711

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TIMES TOWER, TIMES SQUARE, NEW YORK 36, N.Y.

**SUPERIOR**  
STEAM GENERATORS

ening the jack on the oil pump end of the crankshaft.

Of course, great care must be taken during the entire operation to prevent irreparable damage to the crankshaft. The tool must be ground correctly and the crankshaft must be fed into the tool very slowly. To meet this end, it is desirable to mount a dial indicator on the oil pump end of the engine, showing movement of the crankshaft.

After the machining was completed, the engine was cleaned out

thoroughly, a new main thrust bearing insert was installed, and the oil pump was reinstalled. The engine was then ready for operation only two days after the initial bearing failure.

All of this discussion is for an engine whose thrust face nearest the oil pump end of the engine is scored. If the other thrust face is damaged, the procedure may be revised.

By NOEL ACOSTA, Maintenance Department, Carbide and Carbon Chemicals Company, Texas City, Texas.

#### Case 43—Maryland Paper Mill

### Stainless Overlay Combats Corrosion

**I**N planning any new paper mill, one of the first obstacles to be considered and overcome is corrosion. Though this problem is common to many industries, it is particularly serious in the manufacture of paper, since it strikes at the plant's heart—the pulping digesters.

The danger of corrosion could be met with a corrosion-resistant material of solid plate, lining, or clad, but this does not always overcome the problem of erosion nor is it always conducive to efficient maintenance and repair.

Recently, when West Virginia Pulp and Paper Company was planning a new mill at Luke, Md., the corrosion problem was approached in a manner relatively new to the pulping industry.

Experience has shown that certain areas in a digester are more vulnerable than others to the corrosive action of the pulping mix-

ture. The location of these areas, however, can be closely predicted. Generally, severe corrosive damage is localized in the top head and bottom cone areas.

#### Localized Protection

To prevent this in the Luke Mill's digesters, West Virginia asked Graver Tool and Mfg. Co. to apply its skill in the use of special means of combating selective corrosive attack developed and tested in the laboratories of the Crucible Steel Company of America.

The method consists of the application of a protective covering of stainless steel weld overlay on those areas most vulnerable to corrosive attack.

Requirements at West Virginia's Luke pulp mill called for three di-

A section of the stainless steel coating that was welded on the tank plate.

gesters, each measuring 11' 3" in diameter and 42' 9" high. To prevent corrosion of these vessels, Graver applied a thin overlay of stainless steel weld metal to a portion of the top shell and head plates in each. Thus, the danger areas in each digester are protected by the equivalent of a solid sheet of stainless steel.

Since this method of localized protection can be utilized equally well on older vessels also, its advantages immediately become evident. With the passing of time, indications of corrosion can be seen and the vulnerable areas quickly protected with weld overlay before serious damage occurs.

#### Case 44—Mississippi

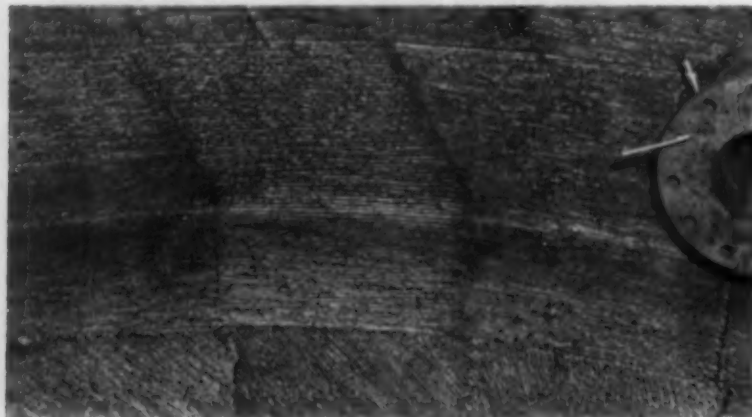
### Synthetic Lubricants

**F**OUR XRD Ingersoll-Rand 350 hp power recovery engines in the ammonia oxidation plant of Mississippi Chemical Corporation, Yazoo City, Miss., have operated on a Ucon synthetic lubricant for more than a year at 460 F without a shutdown.

Ucon lubricants, products of Carbide and Carbon Chemicals Company, a Division of Union Carbide and Carbon Corporation, give this performance because of their resistance to sludging and carbonization. When petroleum oil was used as the cylinder lubricant, maximum operating temperature was 400F, and the engines had to be dismantled every month or two for carbon removal and cleaning.

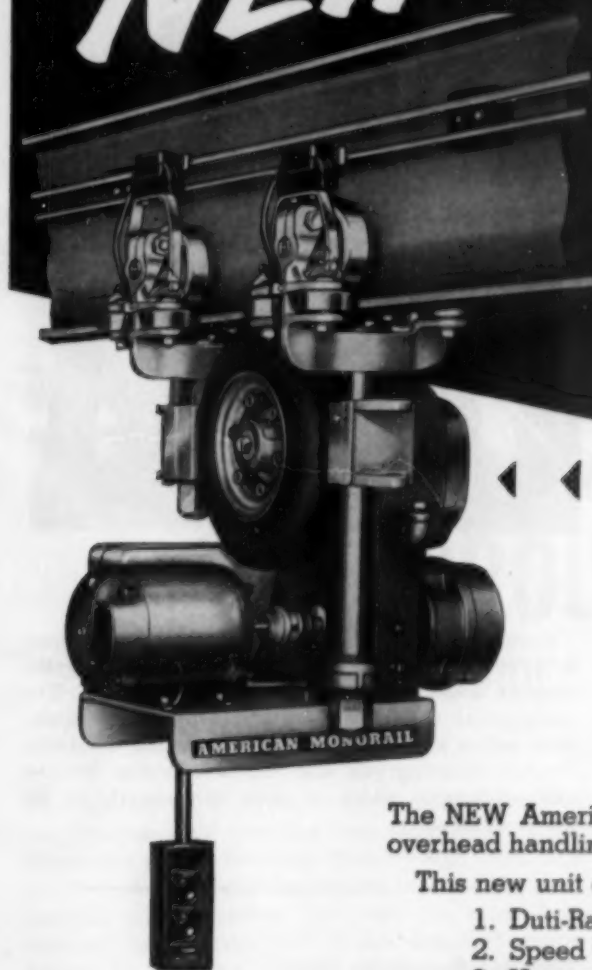
These frequent shutdowns were not only costly from the maintenance and lost production standpoints, but carbon deposition was also contributing to abnormal wear on the compressor cylinders. Temperature of waste gases used to operate power cylinders had to be held down because of breakdown of the lubricant, which caused carbon deposits in the cylinders.

After change-over to Ucon lubricants, production of nitric acid and nitrates in this plant increased because of elimination of downtime for carbon removal. Maintenance costs dropped, and 20% more power has been recovered at the higher operating temperature.



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## AMERICAN MonoTRACTOR for Automatic Handling



The NEW American MonoTractor will fit precisely into any overhead handling system for automatic transfer of materials.

This new unit offers these advantages:—

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3. Horsepower Range for  $\frac{1}{4}$  to 2 H.P.
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5. Any Type Motor Brake Can Be Applied.
6. Operates on Any Smooth Flat Flange Track.

This precision built tractor unit offers continuous trouble-free transfer of any type of carrier for power propulsion. American MonoRail engineers offer wide experience in the application of these units. Let them help you solve your automatic handling problems.



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COMPANY

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[IN CANADA—CANADIAN MONORAIL CO., LTD., GALT, ONT.]

## Better Production—Less Shutdown

A SOUTHERN chemical company wanted to cut the shutdown time during its semi-annual turn-arounds. The operator believed that the outages were causing excessive losses in production with a resulting decrease in profits.

The plant's various piping systems and its process equipment were chemically cleaned by Dowell engineers. This service was included in the plant's regular turnaround maintenance program.

The semi-annual outages were reduced eleven days each. In the case of this plant, each day of outage saved means about \$3,500 additional profit.

Also, after Dowell Service was added to the maintenance program, there was a marked decrease in the number of unexpected shutdowns which were caused by the failure of dirty equipment.

### How Program Works

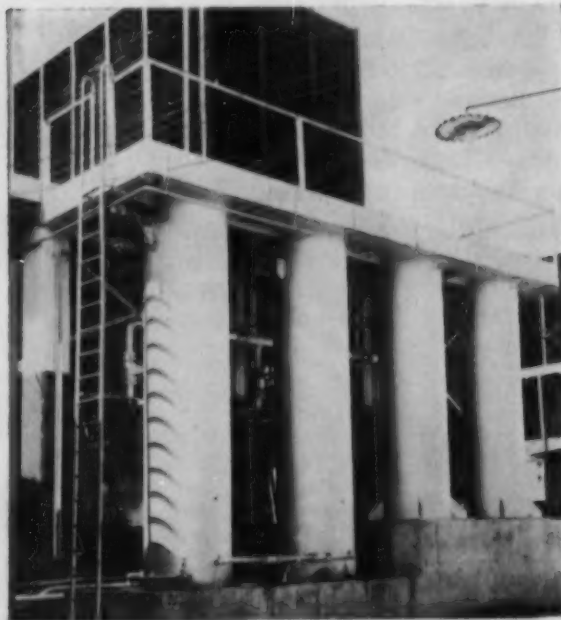
The equipment cleaned by Dowell during the planned shutdowns includes towers, lime slakers, slurry tank exchangers, vaporizers, oil coolers and various pipe lines. In each case, the engineers test a sample of the scale to be removed in order to select the chemical solvents that will do the best job. The equipment is filled with the proper solvents, allowed to soak for a specified period, and is then drained and flushed to complete the cleaning.

Dowell engineers plan the work to fit the maintenance schedule of the plant during the shutdown period. When the job is started they work around the clock with company maintenance men both ahead of them and behind them. This close cooperation between Dowell and the operator allows the most effective use of plant personnel. Careful scheduling



of the work helps eliminate lost time.

Regular chemical cleaning exposes such small items as corroded threads at pipe fittings, pits in pipe walls, leaks in boiler tubes, and deteriorated gaskets. The operator can then repair or replace the faulty equipment before a failure causes an unexpected shutdown. Periodic cleaning can also increase profits because only equipment which is clean can operate at its designed capacity.



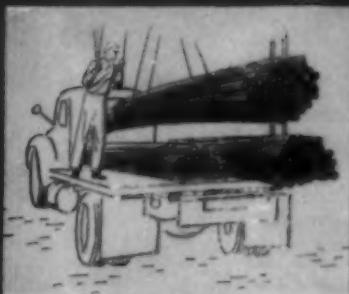
Case 46—Georgia Ice Plant

## Better Condenser Tubing

WHEN tubing installations in these condensers at the Macon, Georgia, Ice Plant of Atlantic Ice and Coal Company, Atlanta, Georgia, failed within two and three year periods of operation, the firm investigated service records of suitable corrosion resistant materials.

Following an analysis of the chemical content of both raw and condenser water used in the condenser application, corrosion resistant wrought iron tubing was selected as the economical choice to replace the failed tubing. More than 5500 ft of 10 gauge wrought iron tubing, 2-in. O. D. diameter is now serving in the condenser units





### 1. Cost of Pipe

The important thing about this cost is that it represents only *one small part* of the piping picture and should not establish the only pipe comparison guide.



### 2. Cost of Installation

This cost generally represents the *major part* of the piping investment and includes labor, fabrication, valves, fittings, covering, and overhead.



### 3. Cost of Maintenance

This is the money paid to keep the piping system in operation as long as the need for it exists. The amount spent depends largely on the quality of pipe used.

# 3

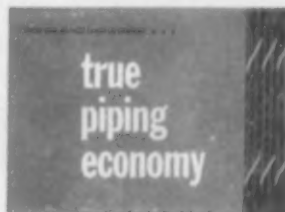
## IMPORTANT COSTS THAT SHOW WHY WROUGHT IRON PIPE PROVIDES TRUE PIPING ECONOMY

This breakdown of piping system costs underscores the reasons why wrought iron pipe users enjoy maximum piping economy even though they pay more, *initially*. These users know that they buy an *installed piping system*, not just the pipe. And because the greatest cost of this installed piping system is in labor, valves, fittings, fabrication, covering, and overhead, the difference between the cost of the wrought iron installation and what a low-first-cost pipe installation would have been, shrinks to an insignificant amount in the cost of the *total piping contract*.

But still more important to the plans and pocket-books of wrought iron pipe users is the Cost of Maintenance. One user put it this way. "A wrought iron installation is like having money in the bank." He was simply expressing wrought iron's longer

service in terms of money saved in repairs, replacement, and maintenance. There's no doubt about it . . . when you consider the three costs, you can buy the best—wrought iron—and get a bargain at the same time.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. International Division: New York, N. Y. Available throughout the world.



### Write for Booklet

The booklet, *True Piping Economy*, gives detailed information on the cost facts presented here, plus many others. You will find it a valuable guide in placing pipe selection emphasis where it will profit you most.

# BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON  
**WROUGHT IRON**  
TUBULAR AND HOT ROLLED PRODUCTS  
ELECTRIC FURNACE QUALITY STEEL PRODUCTS

#### Case 47—North Carolina

### Chain Wear Reduced

THE collection of tobacco dust and sand on the drive chains and on spreader chains was a continued source of trouble in a North Carolina tobacco company.

Frequent replacement of the

chain thru excessive wear had been for years the company policy, because the quantity of oil necessary to give proper lubrication introduced the danger of having the oil dripping onto the tobacco and of contaminating the product.

With considerable reluctance, and moved by the necessity of reducing replacement costs, this tobacco company in August, 1954 started tests on Molub-Alloy Chain

Lubricant. By February, 1955 this lubricant was in regular use in all plants of this company in North Carolina, Virginia, and Kentucky.

Plant foremen commented favorably on the ninety day lubrication cycle. Plant chemists were pleased with the fact that the self-lubricating metallic solids in Molub-Alloy eliminated the danger of a petroleum product dripping into the tobacco and affecting the taste.

#### Case 48—Texas Chemical Plant

### Portable Magnetic Particle Equipment

MAGNETIC particle inspection has proved to be one of the fastest means for locating surface cracking on magnetic materials.

We began using the standard Magnaflux equipment about two years ago. It was bought for the primary purpose of locating defective compressor valve parts. It was soon apparent that the magnetic particle inspection method could be used to good advantage in locating defects in other equipment and machinery, yet we were limited in the use of this equipment as many inspections we would like to make were in areas which might be subject to flammable gas release. This, therefore, materially prohibited the use of the equipment and, too, we had our Magnaflux equipment installed in the shop area on a more or less permanent basis. It can be moved to another area, but it is not convenient or economical in most instances.

What we needed for field inspec-

tion work was a piece of equipment which was easily moved about simultaneously, presenting little or no hazard insofar as being a source of ignition. The Magnaflux Type Y-5 Yoke has filled the bill satisfactorily on these counts. The equipment is light in weight and the power required to operate it is available from any 110 volt lighting circuit, or, as in some cases, it can be used with a mobile powered generator.

#### How It Is Used

We have found the equipment to be of particular help in determining the extent of cracking in equipment which is to be repaired at the shop. Often a crack is visible and its complete extent must be accurately determined so that all of the defective material can be removed during repair operations.

The light weight and portability of the Y-5 Yoke makes it convenient for checking tall items of equipment

from a scaffold or from a ladder, and reduces idle time which would be required if another type of inspection method had to be used.

One particular use where the yoke has paid off is on the inspection of discharge capacity pots on compressors. These pots are normally located in low places and, when process piping is considered, they are inconvenient for inspection or repair work. The service is pulsating, and there is considerable vibration present. Fatigue failure of the nozzle to shell weld is expected to show up from time to time. Periodic examination of these welds with the yoke gives indication of an impending failure and allows the equipment to be shut down on a planned basis before actual failure, thereby reducing the hazard of an unplanned gas release.

The yoke is limited to use in locating surface defects only, since it is designed for alternating current. This is not too serious a handicap, because the vast majority of inspections where we have found this inspection method desirable, more probably contain surface defects than any other type.

All in all, it is a worthwhile tool for an inspection or repair department when magnetic materials are handled and when a fast, accurate, and economical inspection tool pays dividends.

By M. H. VAN MANEN, Process Safety Dept., Carbide and Carbon Chemicals Company, Texas City, Texas.

Only equipment required is the Magnaflux Y-5 Yoke, extension cord, and powder bulb. At the right inspector shows results obtained. Crack is indicated in the 8-in. cast iron 90° elbow.



# Vertical Versatility

**IN PUMPING LIQUIDS FROM  
SHORT SETTINGS**



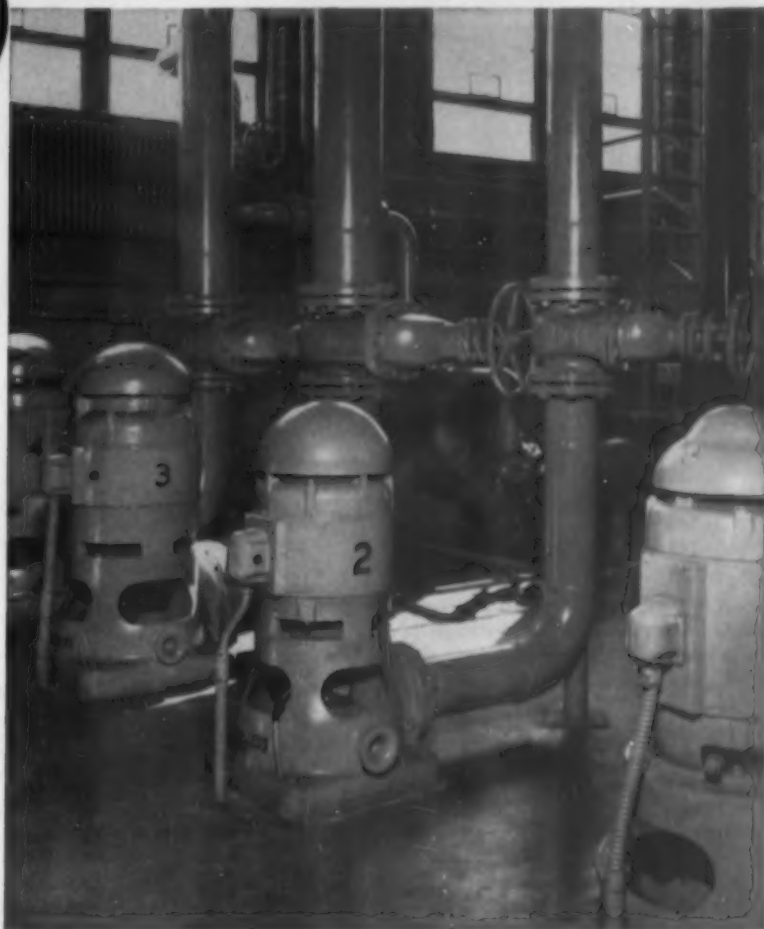
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S P A I





MSA Dustfoe protects R. E. Gann, Atlantic Steel employe, as he blows out an electric motor with compressed air.

#### Case 49—Georgia

### Dust Protection For Man-in-the-Plant

**S**OUND selling has established safety as a basic rule of work at the Atlantic Steel Company plant in Atlanta, Ga.

Company management wisely avoided the hazard of thrusting safety on employes as a "must" method of operating. Instead, constant advertising and promotion have been used to put the program across.

Quality safety equipment facilitated the job, and the combination has worked so well that C. J. Vandeventer, safety director, recently remarked:

"When our employes began asking voluntarily for respirators and other safety equipment, we knew our program had arrived. It is genuinely the employes' program now, not the company's."

The program was the brain child of R. S. Lynch, president of Atlantic Steel, and J. H. Girdler, vice-president, who set it in motion back in 1945.

Since then the company has slashed the frequency and severity of accidents by more than 75% and has achieved one of the most notable safety records in the nation.

The Accident Prevention Committee at Atlantic Steel, known as APC

to plant personnel, consists of supervisors, foremen, and union representatives. All share responsibility for the safety of the company's 2,000 employes.

Atlantic's four furnaces have a capacity of 300,000 tons of steel a year and its finishing mills convert the steel into bars, shapes, strips, cotton ties, nails, wire, bale ties, barbed wire, woven wire fence, rivets, welding rods, metal forgings and stampings, and other products.

#### Precautions Taken

Safety demands good housekeeping in a plant producing such a wide line, and a continuous and well-organized program keeps clear all floors and walking surfaces. Efficient fan and ventilation systems minimize the dust problem wherever possible.

Certain jobs, including abrasive and grinding operations, the periodic cleaning of the top of the plant's 75-ton capacity electric furnace, and blowing out electric motors, require use of respiratory protective equipment.

For protection against dust and steel particles, the company provides the new MSA Dustfoe 55, a development of Mine Safety Appliances Company of Pittsburgh.

The Dustfoe is compact, exceptionally light in weight, and easy to clean and sterilize. A formable aluminum face-piece permits the wearer to mold it to his face. Dust removal is complete with the respirator, although there is scant resistance to breathing. Goggles may be worn easily with a Dustfoe, which also is adaptable for close-up work in confined areas.

While operations at Atlantic Steel do not create the severe respiratory hazards that result from some industrial processes, employes there are grateful for the precautions taken. Mr. Vandeventer explained:

"We have found that the workers greatly appreciate our concern for their comfort and welfare in providing respirators and other safety equipment, even though they might not be absolutely necessary.

"The Dustfoe is the first respirator we have ever had that our men actually come up and ask for. We do not make wearing respirators compulsory for any worker. That might just make him balk. We

try to sell the man working on a dust-hazard job on wearing one for his own comfort and safety. With the Dustfoe, there's mighty little sales resistance."

#### Case 50—Alabama

### Shielded Arc Welding in Plant Maintenance

**F**IELD application of inert gas-shielded electric arc welding now is being used by The Chemstrand Corporation.

This type of welding, long recognized as superior for thin stainless steels because of the cleaner, smoother, less porous welds it produces, usually is confined to fixed locations because of the cooling water required in its application. However, when porosity and corrosion difficulties were experienced with welds made by the electric arc process on Schedule 5 and Schedule 10 stainless steel piping a newly developed mobile and completely integral hell-arc welding machine was employed to overcome these difficulties. Performance of piping in areas where corrosion of welds had been severe now has improved so markedly that additional mobile units are being added for maintenance operations.

Inert-gas arc welding is a welding process where inert gas such as helium or argon is used to protect the weld area from the action of oxygen and nitrogen in the atmosphere. The heat required is supplied by an electric arc struck between a tungsten electrode and the metal being welded. The metal under the intense heat of the arc is melted and fused together. A filler may be used if necessary in the same manner as done in oxy-acetylene welding. Since oxygen and nitrogen are excluded from the weld area no flux is required and consequently spatter, sparks, fumes, and the after cleaning of weld joints are eliminated.

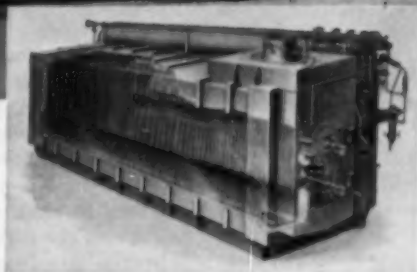
The process is applicable to the special corrosion resistant alloys and other difficult to weld metals which are in wide use.

By PAUL DARMER, Plant Engineer, The Chemstrand Corporation, Decatur, Alabama.



keeping steam cheap . . .

NEXT "START"



### ANOTHER B & W BOILER EMBARKS FOR FOREIGN SERVICE

Headed toward many years of dependable steam-generating service in a Cuban sugar central, this B&W FM Unit joins the long list of B&W Boilers that are now in service in Cuba—a list that started way back in 1879.

Previously, all boilers were shipped in pieces and assembled at the job sites. Now, FM Units up to 40,000 lb per hr capacity—like this oil-burning unit—are shopbuilt—this one loaded on a car for travel without further handling directly to the job site—there skidded into place, service connections made, and put in operation.

The B&W Type FM Water-Tube Boiler combines the advantages of "packaged" steam with many of the benefits of big boiler design. Large capacity with central-station dependability can be installed in small space. Automatic control, with push-button start and stop and fuel-air ratio control, simplifies operation, readily meets load

swings, and provides economical operation over the load range.

The FM's reputation for dependability in service is backed by the resources and boiler-making experience of The Babcock & Wilcox Company . . . one reason why the demand for these versatile units is increasing. Right now, for example, FM Units having a total steam capacity of over 11,000,000 lb per hr are in service and on order for various industries, utilities, institutions, and other users.

The FM is available in standard sizes up to 40,000 lb steam per hr at operating pressures to 235 psi. Many FM Boilers are also in service at higher pressures and, like this Cuban Unit, with moderate superheat.

For complete details about this compact "work-horse," write for Bulletin G-76. The Babcock & Wilcox Company, Boiler Division, 161 East 42nd Street, New York 17, N. Y.

#### FM Features for Economy and Efficiency

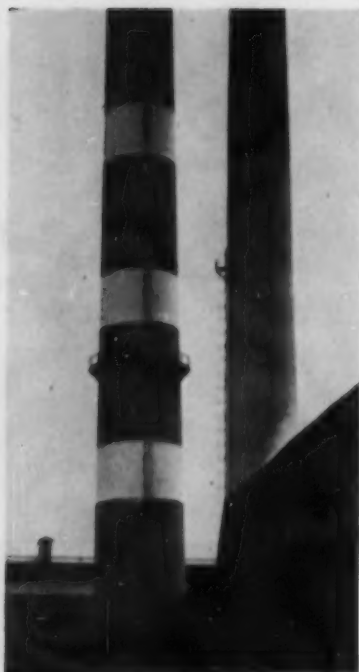
- Saves Erection Time and Cost
- Meets Wide Range of Service
- Handles Quick Load Changes
- Suitable for Outdoor Service
- Safe, Automatic Operation
- Fast Steaming
- Low Maintenance
- Easy Accessibility
- Burns Oil and/or Gas
- Saves Fuel
- Saves Space

**BABCOCK  
& WILCOX**



BOILER  
DIVISION

G-726



Case 51—Oklahoma

## Masonry Stack Painted

**P**AINTED white, with alternate bands of orange, the 410 ft masonry stack, erected in 1954 at the Blackwell, Oklahoma, plant of the Blackwell Zinc Company, is an impressive sight.

The problem of preserving the masonry surfaces of the stack from the effects of the elements was given careful thought. Blackwell decided to stop damage to their new stack before it started and thus prolong its life to the point of maximum economy.

To accomplish this purpose, they coated the entire surface of the stack with Arcopel, the rubberized masonry paint made by The Arco Company. Arcopel is a breathing-type material which seals out moisture but allows vapor to escape from within. It resists alkalis, acids, atmospheric dirt and the effects of wind and weather and stops damage before it becomes costly.

After a full year's exposure, the coating of Arcopel on the Blackwell Zinc Company stack still is impervious to the attacks of weather and will continue to give durable protection and across-the-board economy over a long period of years.

Case 52—Texas

## Safe Practices For Cyanides

**T**HE common practice for using cyanide salts for case hardening can be dangerous. It can cause serious sickness or even death if the proper precautions for their use are not taken. Poisoning may occur by absorption through the skin, through cuts or abrasions, through ingestion or through inhalation. The greatest danger lies in the gas formed by contact of the wetted salt or salt solution with any quantity of any acid. This forms the deadly hydrogen cyanide gas, similar to the "nerve gas" recently in the newspapers.

Hydrogen Cyanide Gas (HCN) has a characteristic almond odor detectable, after training, at about one parts per million. Symptoms of poisoning are: giddiness, headache, unconsciousness, and convulsions with cessation of respiration—death.

To save the victim of HCN poisoning from reaching this final stage, the following aid measures are recommended:

1. Move the victim to fresh air.
2. Call for immediate medical aid.
3. Start artificial respiration, if breathing stops.

Cyanide salts may be used with complete safety if handled properly.

1. Store in plainly marked containers in a cool place away from acid fumes or acids—including soldering and brazing fluxes.
2. Wear "Dustfoe" respirators and rubber gloves when handling the salts.
3. Ventilate the work area thoroughly.
4. Wash clothing after using cyanide salts.
5. Do not work with the stuff if you have cuts or abrasions.
6. Do not eat, smoke, chew tobacco or gum while handling cyanide salts.
7. Stay in a position where you can be easily seen by fellow workers.

By LLOYD BAILEY, Maintenance Department, Carbide and Carbon Chemicals Company, Texas City, Texas.

Case 53—Paper Mill

## Contamination Problem

**P**APER was being contaminated in a southern paper mill by a mixed deposit of calcium carbonate and pulp fiber that had accumulated in a stock line. The line was 18 in. in diameter and run from the pump mill to the bleach room, approximately 3300 ft.

Frequently, particles of the deposit would slough off the inside of the line and enter the bleach room with the stock. Since the calcium carbonate did not permit bleaching of the fiber, paper was being ruined before it reached the machines.

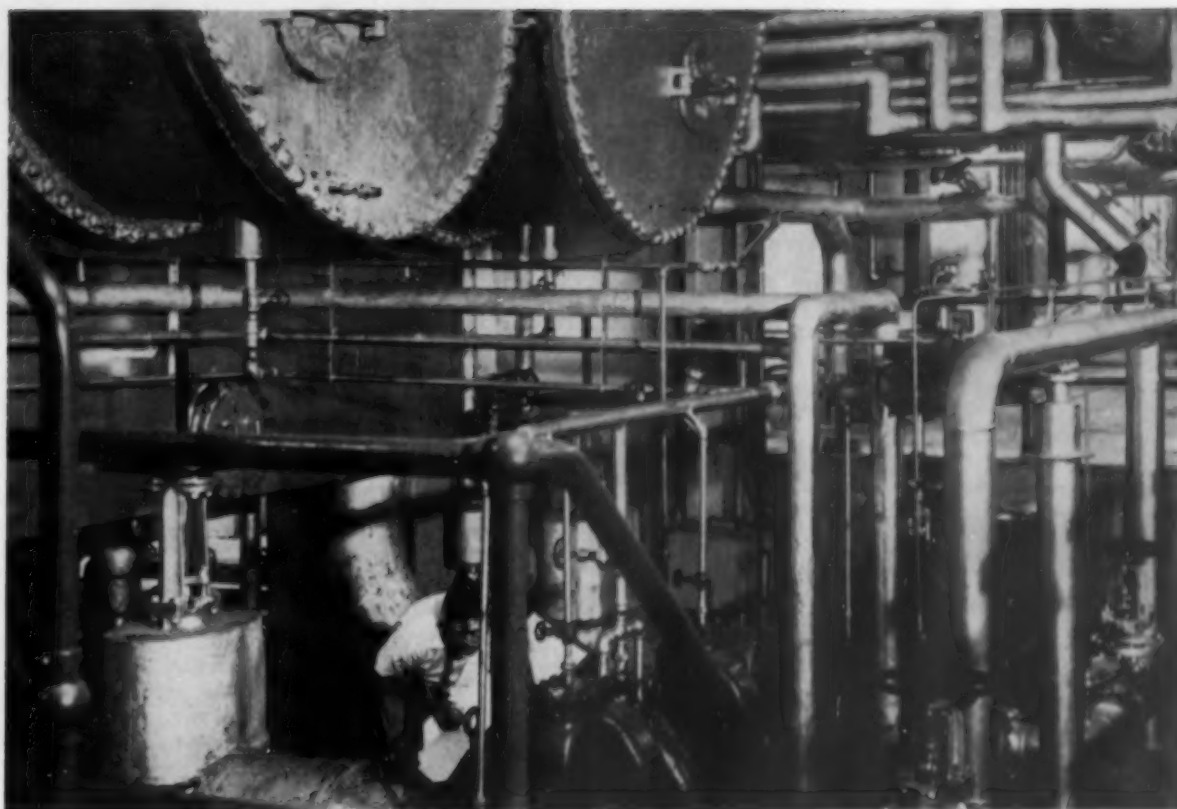
The operator asked Dowell to recommend a solution to the problem. Dowell engineers proposed to pump a "pipe line pig" through the line to remove the deposit.

### Pig Does Job

Use of the pig was recommended because the pipe contained a wood lining and it could not be determined definitely that solvents would not harm the lining. It was feared that the calcium carbonate had impregnated the lining and that the reaction of the deposit with solvents might raise splinters on the lining. Dowell engineers felt that a pipe line pig could be used to clean the line with no damage to the lining.

The line was broken into 10 sections ranging from 200 to 500 ft. in length. The pig was inserted into the first section, the pipe flanged up and water pumped in behind the pig. When sufficient pressure had built up, the pig started to move through the line at about five feet per minute. Two passes of the pig were made through each section in this manner.

Each section of the line was inspected by the operator after the final pass of the pig. Approximately 99% of the scale was removed by the pig. The small amount of scale remaining was due to irregularities in the surface of the wood lining. There was no damage to the lining by the pig. When the line was put back into operation, the operator had no trouble in the bleach room with his paper being contaminated by deposits.



## Deaerating Condenser Exceeds Guaranteed Performance

	guarantee	actual performance
Condensate depression	0	0
cc of oxygen per liter in condensate	0.01	no measurable amount

This 50,000 sq. ft. steam surface condenser was installed by Lummus for Carolina Power & Light Company, Goldsboro Steam Electric Generating Plant, Goldsboro, N. C., Ebasco Services, consulting engineers. The unit is a deaerating type condenser of Lummus' patented design, serving a 66,000 KW turbine.

After three years of operation, it is still meeting and exceeding the original performance guarantees, as tabulated above, under all conditions of operation.

The unit was designed to condense 400,000 pounds/hr. of exhaust steam from the turbine at 2.10" Hg. abs. and deaerate the condensate. In addition to the condensate the unit must deaerate 50,000 pounds/hr. of drains from feed-water heaters and 100,000 pounds/hr. of cold make-up water at ambient temperature. The drains and make-up water enter the condenser above the tube bank and are deaerated in the Lummus patented deaeration section. Tests run with supersaturation of

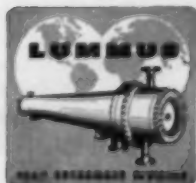
air in the cold make-up were handled with complete removal of oxygen and other dissolved gases without any unbalancing of the system.

Lummus-designed equipment gives results of this caliber consistently. May we sit in with your engineers on the project coming up?

**THE LUMMUS COMPANY**, Heat Exchanger Division, 385 Madison Avenue, New York 17, N. Y. • Atlanta • Boston • Chicago • Cincinnati • Cleveland • Dallas • Denver • Detroit • East Chicago (Indiana) • Houston • Kalamazoo • Kansas City • Los Angeles • Minneapolis • Nashville • New Orleans • Newton (Iowa) • Niskayuna (New York) • Omaha • Pittsburgh • Salt Lake City • San Francisco • Springfield (Mass.) • Syracuse • Toledo • Wayne (Pa.) • Athens • Buenos Aires • Caracas • The Hague • Lima • London • Mexico City • Montreal • Paris • Rome • San Juan

Fabricated Piping Division Plant at East Chicago, Ind.

Steam Surface Condensers • Evaporators • Extraction Bleeder Heaters • Steam Jet Air Ejectors • Steam Jet Refrigeration • Barometric Condensers • Heat Exchangers for Process and Industrial Use • Process Condensers • Pipe Line Coolers.



# LUMMUS

THE LUMMUS COMPANY, HEAT EXCHANGER DIVISION • 385 MADISON AVENUE, NEW YORK 17, N. Y.





Upper view shows the Swing Table blast cleaner with a load of large meters ready to go into the blasting compartment. Lower view shows meter parts after being cleaned.

Case 54—South Carolina

## Abrasive Blast Cleaning of Meters

ONE of the recent developments in cleaning techniques used in reconditioning water meters in the application of the blast cleaning process. It is currently replacing the conventional chemical methods for several reasons: It cleans faster, it reduces cleaning costs, it improves working conditions in the plant, and it provides a higher standard of metal cleanliness. No material is left in the pores of the metal to accelerate the recurrence of corrosion.

Cities Supply Co., Inc., Sumter, S. C., is a typical shop that uses blast cleaning methods. The company uses a Wheelabrator Swing Table airless blast cleaning machine for some meter components and an American airblast cabinet for others. Both machines were made by American Wheelabrator & Equipment Corp. and give the shop enough cleaning capacity to take care of meter repairs and testing for more than 700 municipalities.

At first, this company used the

acid method. The original switch to abrasive blast cleaning was done only with the airblast cabinet. Increased production through the years caused the management to select the airless blast cleaner also. At present, about 95% of the cleaning work is done in the airless unit, and 5% in the airblast unit.

A typical batch for the airless blaster is 25 to 30 of the  $\frac{5}{8}$ " meters. Three minutes of blast time is given; then the parts are turned over and given a second three-minute blast. This short period of cleaning makes it possible for the meters to be dismantled in one-fourth the former time.

The inside casings are put back into the machine for three minutes of blast. This totals nine minutes of blast time for the 25-to-30-meter quantity.

The airblast cabinet takes care of the discs, registers, and chambers. Blast cleaning is used on every type of meter this company encounters from its customers.

Case 55—Arkansas

## Dual Element Fuses Stop Shut-Downs

IN THE fall of 1951 in our cafeteria at Little Rock, we installed a new 1200 ampere switch. This switch controlled the lighting, refrigeration and a 115-ton air conditioning load.

Everything was fine until the temperature reached 85 degrees and the summer air conditioning load came on. Then we had trouble. Three times in May, 1952, during our noon rush our whole place was shut down. Our dining rooms seat 500 people at a time, so a shutdown during the noon rush means a great loss to us.

We were fighting mad about the whole affair as the installation was practically new. Mr. Menees of the Arkansas Power and Light Co. was called in.

He suggested that the trouble was due to the adding of the summer temperature to the normal heating of the fuses. Then he recommended that we discard our ordinary fuses and install Fusetron dual-element fuses manufactured

by Bussman Manufacturing Co. These modern fuses operate at a much cooler temperature than the previous fuses.

This we did. To date now, over one year since we made the change, we have not had shutdown due to a fuse blowing even though today's temperature outside is over 100 degrees. The cooler operation of Fusetron fuses stopped shutdowns cold for us.

By C. A. FRANKE, Pres., Franke's, Inc., Little Rock, Ark.

Case 56—Georgia

## How to Remove Lint From Air Washers

TEXTILE mills, employing central station air washers, find lint is a problem in that it accumulates in the washer. This lint will stick to the eliminator plates. As the eliminators make several turns, it is very difficult to remove. Conventional water treating methods for a long time have tried to cope with the problem with varying degrees of success.

In order to provide the maintenance men with a new approach to the problem, "Ipeco" Lintoff G. 36 was developed. This material removes the lint from the eliminator by penetrating into the section where neither wash down hoses or brushes can reach. The solution is circulated while the washer is in normal operation. It loosens the lint accumulation and frees the eliminator so that better air flow is possible.

In one Georgia mill the clean up crew was spending six hours on the week end to clean their washers. After using Lintoff this time was reduced to two hours and the saving in manpower alone easily made up the cost of the material. Removal of lint by hand was cut from 5 barrels per week to  $1\frac{1}{2}$  barrels. The remaining lint was dispersed and flushed down the drain causing no difficulty.

Lintoff G. 36, supplied by Industrial Products Co., Atlanta, Ga., is simple to use and contains a rust inhibitor that protects the equipment against rust. It eliminates the need for other chemical treatments in this mill's washer.



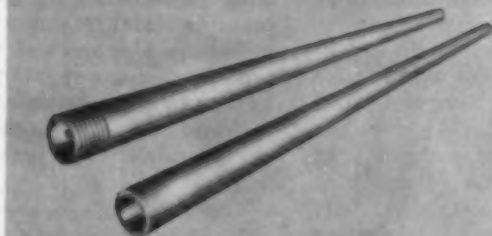
*Iron... Steel... Bronze...  
Special Alloys and now... **PLASTICS!***

## **WALWORTH PVC**

***globe and diaphragm valves***



***pipe and fittings***



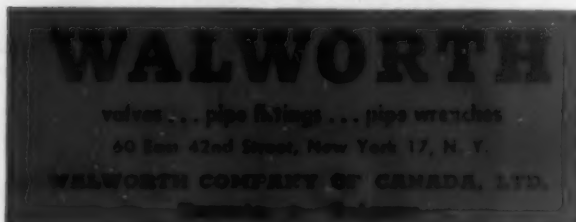
### **CORROSION-RESISTANT TO GIVE YOU NEW AND LASTING PROTECTION!**

Walworth rigid plastic polyvinyl chloride valves, and fittings provide safe, trouble-free lines to handle wet and dry hydrogen gas—sulphur dioxide—dilute nitric acid—sulphuric acid—natural gas—sugar juice—milk—vinegar—tanning solutions and literally scores of other corrosive as well as noncorrosive materials in the chemical, petroleum, pulp, paper, food and other industries.

Walworth polyvinyl chloride valves and fittings are molded to the same rigid Walworth specifications by the same molder—the General American Transportation Corporation—of the same basic material, — Geon rigid vinyl from B. F. Goodrich Chemical. Rigid plastic pipe of the same materials and made by the same molder is also available. Consistent performance is therefore assured throughout all-Walworth PVC piping systems. Plastic valves, fittings, and pipe offer the following advantages:

1. Exceptionally resistant to most salts, alkalis, and nonoxidizing acids at temperatures below 150° F.
2. High burst strength and impact resistance.
3. Nontoxic, and extreme low flammability.
4. Easy to install.

Get the complete Walworth PVC product story. Write for brochure containing detailed specifications, characteristics, and application data.



**DISTRIBUTORS IN PRINCIPAL CENTERS THROUGHOUT THE WORLD**



A Multi-Amp instrument of this type is being used at The American Cyanamid Company, New Orleans, for running performance checks on time delay relays of the magnetic and thermal type and safety runs on circuit breakers.

#### Case 57—Louisiana

### Circuit Protection

THE American Cyanamid Company, New Orleans, purchased a Multi-Amp Model 1005/330/361 principally for running performance checks on time delay relays of the magnetic and thermal type and safety runs on circuit breakers, but has discovered several other worthwhile applications for the instrument, the net result being better production through assured protection.

Not only does the Multi-Amp enable Cyanamid's electrical maintenance engineers to ferret out inoperative or malfunctioning current-actuated protective devices before overloads taxed their capacity to protect crucial motors, but it finally provided them with a tool that could do the job quickly, effectively and without danger to personnel or line equipment. Undependable visual and mechanical inspections, and tricky phantom loading with makeshift power sources, are things of the past.

#### Application Data

The Multi-Amp is rolled to inspection points, plugged into a convenient 120- or 220-volt outlet and quickly adjusted by stepless increments to generate required overloads for passage through the thermal response or electromagnetic

elements of time delay relays. Multi-Amp's built-in ammeter and electronic stop timer instantly record trip time values for doubt-free determination of the overload protection actually achieved under the present ambient conditions. Removal from line or special lead-in or disconnection is never necessary.

This important function alone often repays the cost of the unit many times over during inspection trips by eliminating production stoppages and equipment maintenance that might have resulted from motor burnouts and industrial fires. But the design features of the Multi-Amp, being anything but self-limiting, were employed to other good advantages at the plant.

#### Case 58—Virginia

### Bearing Lubrication

HEAVY loading under high heat seven days a week created a lubrication problem in a Virginia paper mill that resulted in frequent breakdowns and loss of production. Steam joint thrust bearings on the paper drying rolls operated at 250F and 120 lb steam.

These operating conditions established the need for solid metallic lubrication rather than fluid petroleum. Since April, 1954, there has been no failure of a steam joint bearing using the Molub-Alloy grease lubricant containing Moly-Sulfide and other self-lubricating metallic solids, which is manu-

factured by Imperial Oil & Grease Co.

Static tests in the laboratory, as well as practical operational tests on the paper drying machinery, showed this paper mill that Molub-Alloy grease would not dry out or cake in anti-friction bearings under high heat and high temperature. The success of this lubricant under adverse operating conditions indicated that Molub-Alloy would also be suitable for a general plant lubricant.

This paper mill is also successfully using Molub-Alloy chain oil under dusty difficult conditions.

#### Case 59—Texas

### How to Cut Off Non-Burnable Metals

THE problem of cutting off copper, stainless steel, and other non-burnable metals without subsequent grinding has been solved by utilizing pipe-threading machines already in use in most shops.

Non-burnable metals had been cut off, in the shops at Carbide and Carbon Chemicals Company, Texas City, Texas, by the ordinary means. These include melting with oxy-acetylene torches, cutting with high speed abrasive wheels, hand hack saws, and lathes. With the exception of the latter method, a grind-

ing operation followed the melting or cutting in order to provide proper joint preparation.

The solution in the case proved to be the utilization of the cut-off feature of two pipe-threading machines already available in the shops. These machines combine the cut-off and joint preparation into one simple operation. By using these machines, costs were cut two-thirds.

By LLOYD BAILEY, Maintenance Department, Carbide and Carbon Chemicals Company, Texas City, Texas.

**KEEP UP-TO-DATE**

**See Pages 16-19**



**BETTER PRODUCTION . . . . . in the South and Southwest**

## Section 6

# Production Equipment

Case 60—Florida Packing Company

### Increased Brine Chilling Capacity

**I**NCREASE in brine chilling capacity became necessary to accommodate the increase in production of frozen concentrate at Pasco Packing Co. in Dade City, Fla. Already installed and in use was a Carrier centrifugal compressor using Freon-12 as a refrigerant.

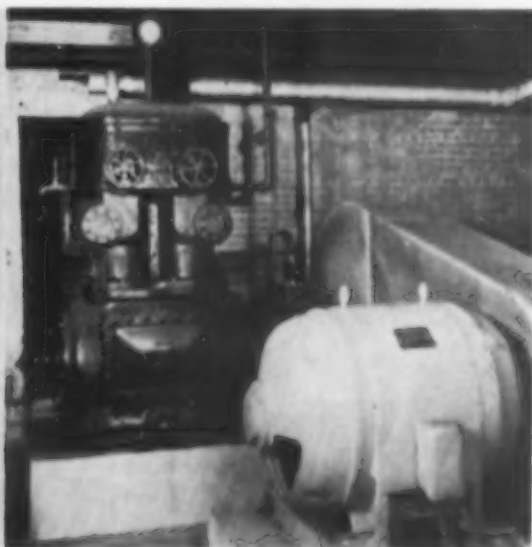
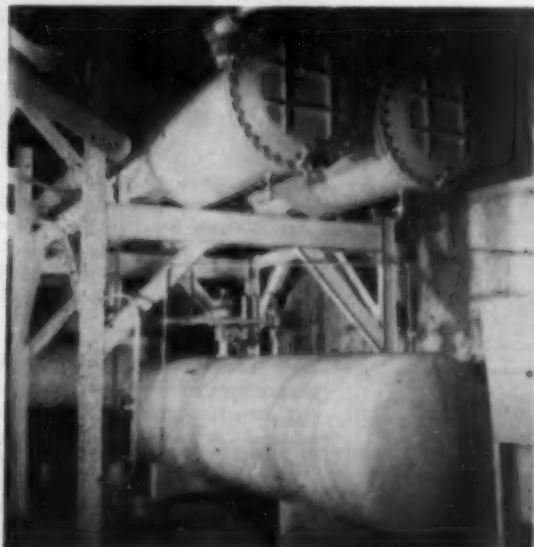
Its 232 ton capacity was not enough.

To supplement this machine two sets of rotary booster compressors and companion V S A high pressure compressors were added using ammonia as a refrigerant. Since it was impossible to change the freezing tunnel and brine circulat-

ing system, the chillers for the ammonia system were installed in the brine circulating cycle ahead of the chiller of the Carrier centrifugal compressor.

The warm brine (—20 F) first passes through the chillers of the

Condensers and receiver in ammonia cycle for increased chilling capacity are shown at left. The view at right shows one of the 11' x 10" Frick high pressure compressors used with Fuller rotary booster compressors.



ammonia cycle and is chilled by five to seven degrees, then it flows through the chiller on the Freon-12 cycle and is chilled to thirty or thirty-two degrees below zero F.

When the freezing tunnel is charged with brine and circulation is established, one pair of compressors is then allowed to ride on the load unattended except for periodic checks on lubrication and cooling. The Carrier unit is then started and used to chill the brine to the desired temperature.

This becomes a nice arrangement then for one operator because the variable speed Carrier unit with a twelve speed point controller can be operated at any of the top six speeds to maintain an effluent brine temperature of minus thirty degrees F or lower.

The rotary booster compressors are now available with capacity control. They can be either belt driven or direct connected. When used as belt driven compressors, the rotary booster can often be used in compressor rooms when space is at a premium because of the versatility in setting. Rotaries must be selected for a rather close range of suction and discharge conditions and cannot be used as second stage machines.

The machines used at Pasco were Fuller rotary booster compressors purchased from Freezing Equipment Sales Co. of York, Pa. York Corporation also sells rotary booster compressors.

By A. T. LOHKAMP, Engineer, Pasco Packing Co., Dade City, Florida.

Textile bleaching is now being successfully carried out as a continuous and automatic operation. A large southern mill uses the system shown in the diagram. Two saturating baths are used (one for caustic and one for peroxide), with Becco J-boxes and rinsing baths incorporated at the proper places in the bleach range.

The peroxide saturating bath is maintained at the proper solution concentration by a three cylinder formulating pump. A minimum of operator attention is required with the continuous bleach system, bleach costs are reduced, and a high degree of bleaching uniformity is obtained.

A variable speed drive was incorporated so that the combined pumping rate from all three cylinders could be adjusted automatically according to the speed of the cloth through the bleach range. Different materials require different processing speeds. Adjustment in the proportion of the silicate peroxide and caustic flows is accomplished by the dial stroke length adjustment while the system is operating.

Although shaft scoring was initially experienced with the plunger handling sodium silicate, the trouble was soon corrected with the use of an alloy plunger and special packing. This installation was subsequently so successful that the customer soon ordered a second unit, and shortly thereafter placed an order for a third. The latest addition to this bleachery includes a fourth unit.

Continuous bleaching, made pos-

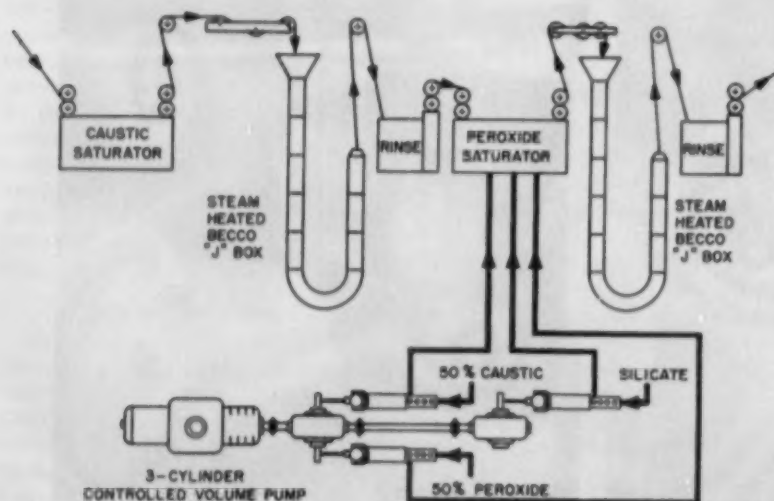
#### Case 61—Southern Bleaching Plant

### Controlled Volume Pumps Permit Continuous & Automatic Process

UNTIL recent years, most of the cloth produced by the textile industry was bleached by batch operation. Such processing involves a long and difficult cycling operation. The cloth is first boiled under pressure for 8 to 15 hours in a caustic soda solution. After a thorough rinse, the actual bleaching is carried out with an alkaline peroxide solution requiring 4 to 8 hours, and the cloth

is again well rinsed. Chief among the drawbacks of such a bleaching procedure are the following:

- (1) High unit labor cost.
- (2) Steam consumption is high.
- (3) Excessive process time.
- (4) A large amount of cloth is in process at all times.
- (5) Poor uniformity of bleach from batch to batch and sometimes within the batch.

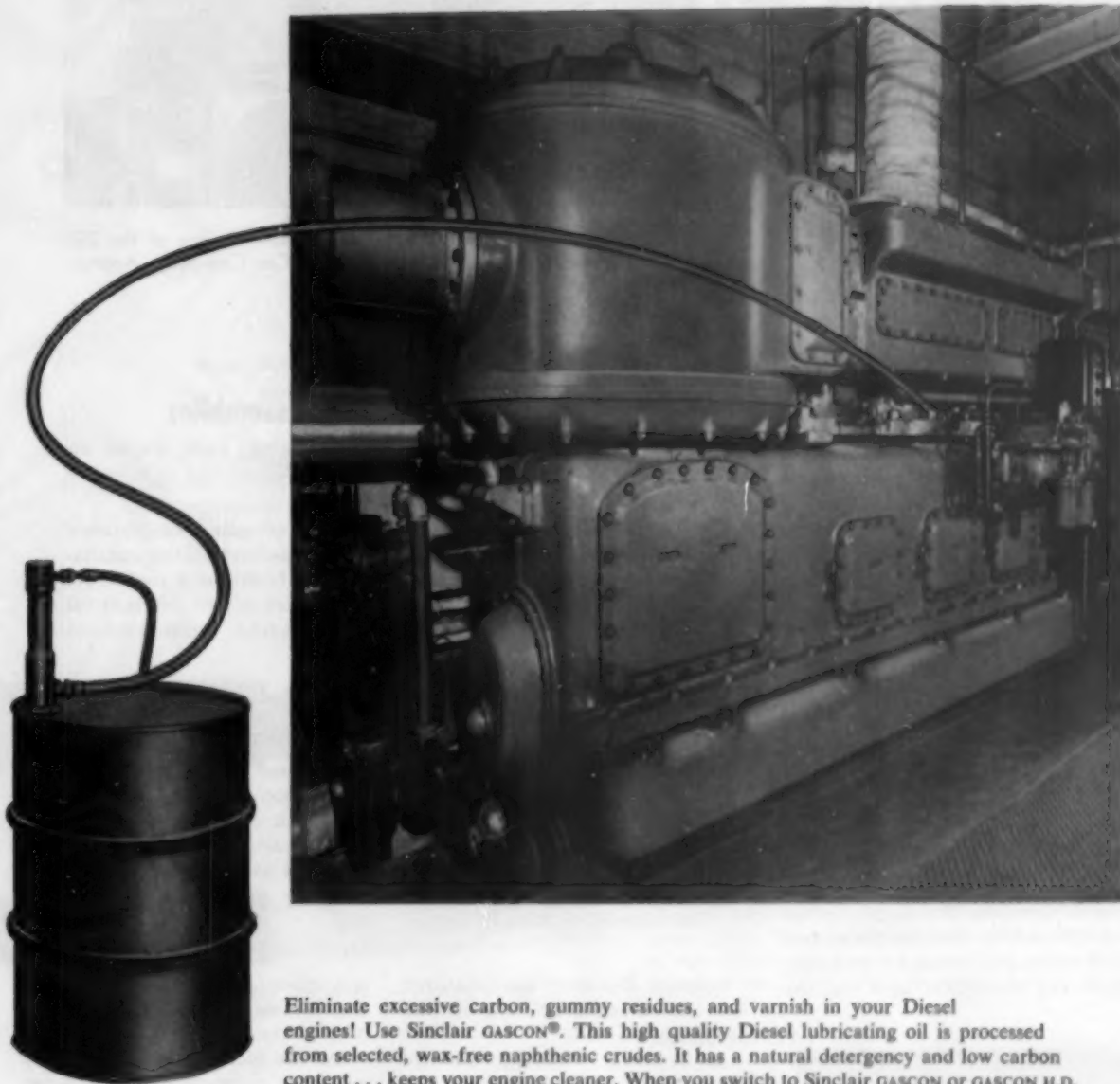


This is a good example where controlled volume pumps are used to control three flows in proportion to each other, and, while maintaining the set proportion, to vary all three flows in accordance with a variable speed of the process.

With continuous operation, desired proportions of the three chemicals in the peroxide bath are automatically assured. A perfectly uniform blend is obtained with the minimum of attention. Supervisory costs are reduced as are labor costs in handling batch processed material.



# Check Carbon!



Eliminate excessive carbon, gummy residues, and varnish in your Diesel engines! Use Sinclair GASCON®. This high quality Diesel lubricating oil is processed from selected, wax-free naphthenic crudes. It has a natural detergency and low carbon content . . . keeps your engine cleaner. When you switch to Sinclair GASCON or GASCON H.D., you know that pistons, rings, valves and exhaust ports stay free from carbon, gums and varnish.

No matter what design of engine you're operating, you'll be 'way ahead with Sinclair's complete line of Diesel lubricants. Contact your local Sinclair Representative now for full details, or write Sinclair Refining Company, Technical Service Division, 600 Fifth Avenue, New York 20, N. Y.

## **SINCLAIR GASCON OILS**

sible for this manufacturer through the use of Milton Roy Company controlled volume pumps, has enabled him to handle cloth at the rate of 50 to 250 yards per minute. With the batch process, it took 16 to 24 hours for the treatment of a single batch.

#### Case 62—North Carolina

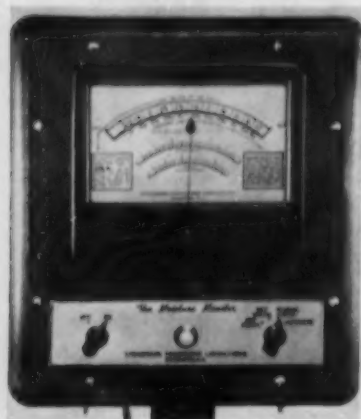
### Moisture Measurement

**C**OTTON and all other hygroscopic materials pick up and lose moisture to the atmosphere depending upon the nature of the material and the relative humidity of the atmosphere. A cotton mass, containing three pounds of water, may enter the picker room where the regain is such that the mass should contain five pounds of water. Upon being exposed to the new regain conditions, the cotton will begin the process of picking up moisture, but this may require several hours to several weeks.

The cotton lap is made by the picker in about eight minutes, and the entire mass of cotton is rarely in the picker room itself for more than twenty minutes before it is weighed. Consequently, the weighing is inaccurate and the laps are not uniform.

#### Monitor Development

One of the earliest observations of these effects was made at the Fieldcrest Sheeting Mill at Draper, North Carolina. Mr. Ralph Going, superintendent, installed the second instrument ever made for this purpose. The instrument used was the

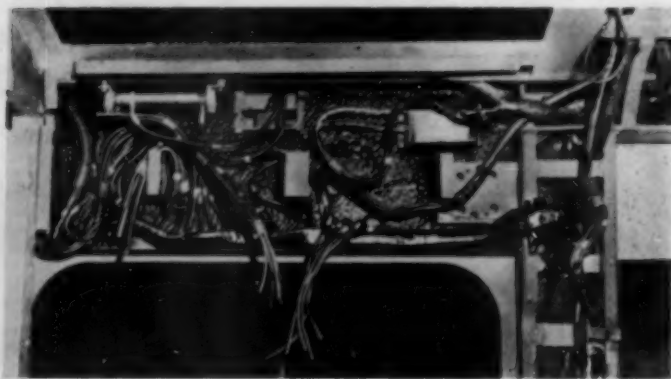


"Moisture Monitor" manufactured by the Strandberg Engineering Laboratories, Inc.

Mr. Going carefully checked picker room relative humidity and calculated regain against actual regain measurements of the cotton by the instrument. His findings, like the many mills which have since installed the new instrument, were that the two indications were not in agreement and not proportional.

These normal departures of possibly four per cent effect about two pounds of error in determining the amount the lap should weigh.

The Fieldcrest Sheeting Mill at Draper began using the instrument to determine the scale reading re-



Prefabricated assemblies of car wire are shown in one of the 250 subway units recently built by the St. Louis Car Company. Approximately 247,000 ft of wire was used.

#### Case 63—Missouri Car Manufacturer

### Prefabricated Wiring Assemblies

**P**REFABRICATED assemblies of wiring have played an important role in the construction of 250 subway cars by the St. Louis Car Company.

Approximately 247,000 ft—more than 46 miles—of National Electric Products Corporation car wire was used in the installation. The 600-volt wire, ranging in sizes from No. 4 to No. 16, was used throughout the interior of the cars to provide electrical service for lighting, air-conditioning, heating, communications and general operations.

Assembly lines were used to fabricate much of the wiring which went into the cars being built for the Chicago Transit Authority. They are the latest type "L" all-metal subway units.

Considerable saving in construction time was reported as a result of the prefabrication. Installation was speeded further by the use of National Electric car wire which is small in diameter, requires less space and consequently is easier and faster to install. The wire used has a neoprene jacket as protection against acids, heat, oil, moisture and the heavy vibration conditions encountered in subway service.

quirements. Uniformity after carding became the highest in the history of the mill.

At the picker, the cost of clean cotton is generally over \$20.00 per lap, and these laps are being made at a rate of one every eight or nine minutes per picker.

There is no question that a great amount of money is involved in failure to maintain constant lap weights, and, aside from the very significance of the problem, the lack of uniformity, it might be said that a cotton yarn mill will incur its lowest cost of raw material per yard of yarn produced when the weight of cotton being consumed is constant per yard of yarn produced.

complete line of **HEAVY-DUTY** cords helps you

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Now—Anaconda introduces new portable cords with rugged construction . . .  
peak performance . . . and top flexibility for 3 types of service!

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new engineered cords designed with the  
exact physical properties needed for each  
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based on good engineering and sound  
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Whichever cord you choose, the Anaconda  
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**SERVICE**—Underwriters' approved Types S and SJ.

**SECURITYFLEX® CORDS** for severest conditions. Toughest, sturdiest cords made . . . used where strength and wear-resistance are a "must." Neoprene jacket *mold-cured in lead* gives top crush, abrasion- and oil-resistance. Cords pay for themselves with long life under severest conditions—in mines, railroads, docks, and in heavy industrial use. Look for the molded-in name, "Securityflex!"

**INDUSTRIAL CORDS** for heavy industrial conditions and *maximum flexibility*. Lower in cost. Specially designed for use in heavy industry—where cords are in continuous operation and must be tough, flexible, oil-resistant. Tough neoprene jacket. Many industrials stock this one cord for use in virtually all applications . . . reducing inventory problems and costs. Look for the Anaconda marking on jacket.

**SERVICE CORDS** for regular duty. Lowest in cost . . . yet have many features found only in higher priced cords of other makes. Special rubber jacket withstands abuse and moisture. Outstanding for appliances, office machines, portable tools—where flexibility and long life are needed.

\*Reg. U. S. Pat. Off.

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#### "FREE "PORTABLE CORDS" BULLETIN"

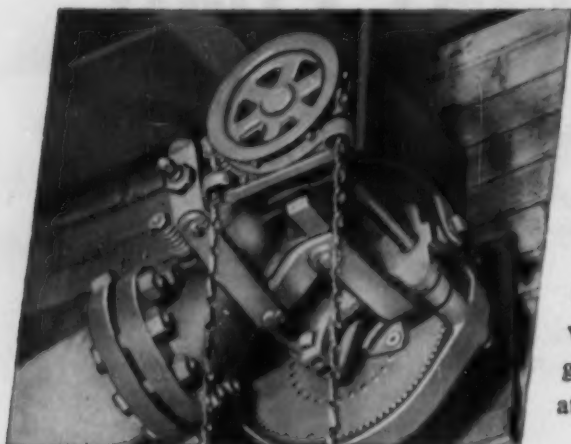
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"Portable Cords" bulletin, DM-5538.

NAME & TITLE.....  
COMPANY.....  
ADDRESS.....  
CITY, ZONE, STATE.....

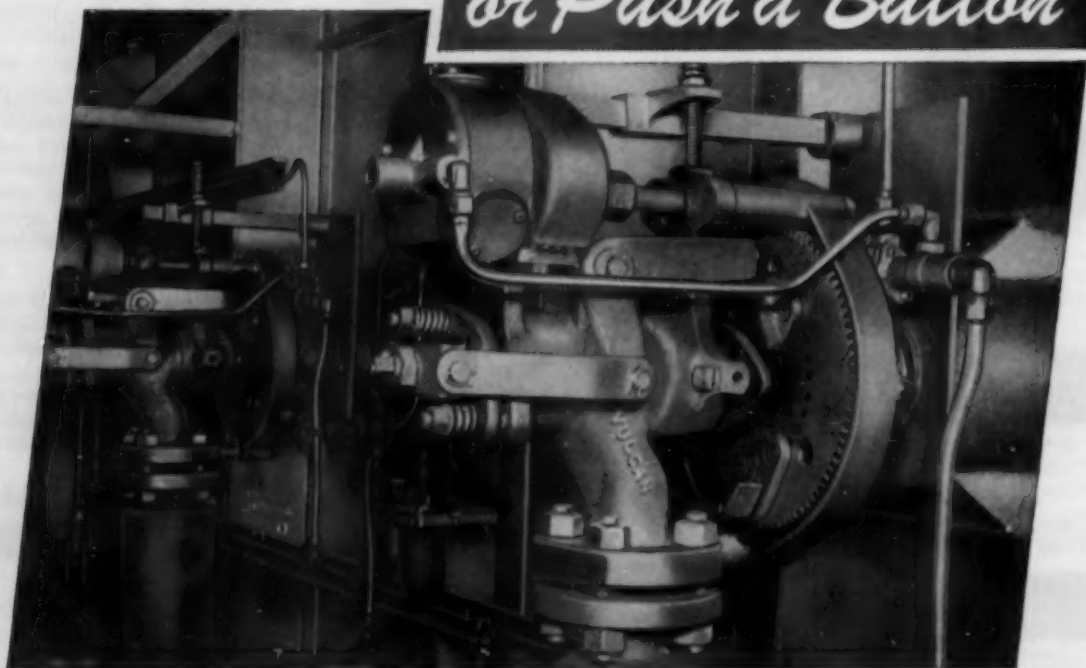
# *Pull a Chain*

## for full 360° boiler cleaning



Hand-operated or motor-driven—every Vulcan Rotary Soot Blower gives exactly the same 360-degree cleaning action. In fact, you can change a manually-operated Vulcan Rotary to an automatic unit by merely replacing the sheave wheel with an air or electric motor, and adding a control block. Uniform blowing pressure—from start to finish of the cycle—is assured by an exclusive trigger-action valve. And this valve seals off corrosive furnace gases from internal parts. For better boiler cleaning at low cost, depend on Vulcan.

# *or Push a Button*



**COPES-VULCAN DIVISION, Continental Foundry & Machine Company, ERIE 4, PA.**

# **VULCAN** Rotary SOOT BLOWERS



# SURGEABILITY...

## THE LATEST WORD IN WATER TREATMENT

Surgeability is defined as stability of performance under rapidly changing and unpredictable conditions including flow. This characteristic is vitally important in clarification and cold process softening installations. Surgeability is designed and built into the Graver Reactivator®.

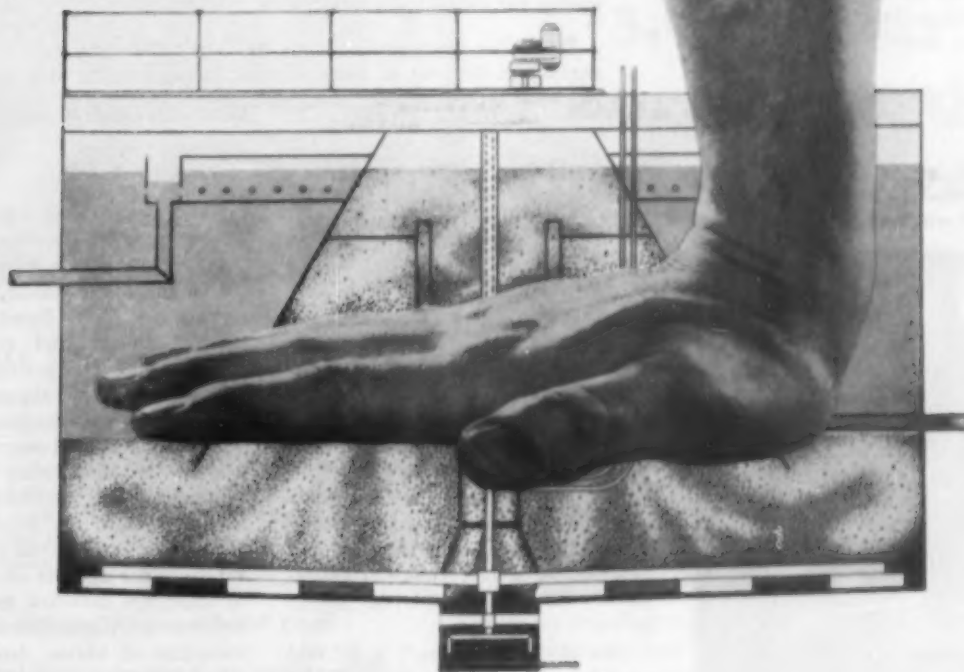
Once optimum chemical conditions are established, there are two important features that give the Graver Reactivator a high surgeability factor:

**Controlled Sludge Recirculation** . . . providing more rapid solids contact and shorter retention time.

**Low Sludge Level** . . . providing maximum depth of clarified water between sludge-clear water separation zone and the effluent collector.

Other design features are **Variable Speed Impeller** and **Over-All Sludge Removal**.

WRITE FOR DESCRIPTIVE CATALOGUE WC-103A



Department NK

**GRAVER WATER CONDITIONING CO.**

A Division of Graver Tank & Mfg. Co., Inc.

216 West 14th Street, New York 11, N. Y.

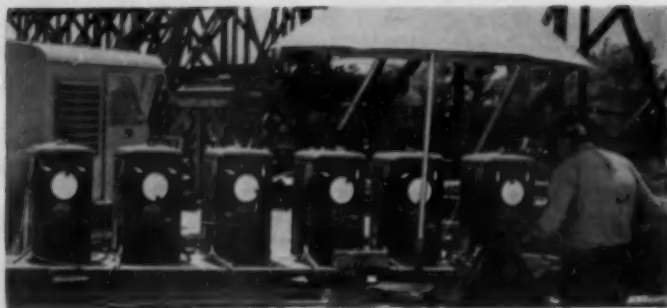
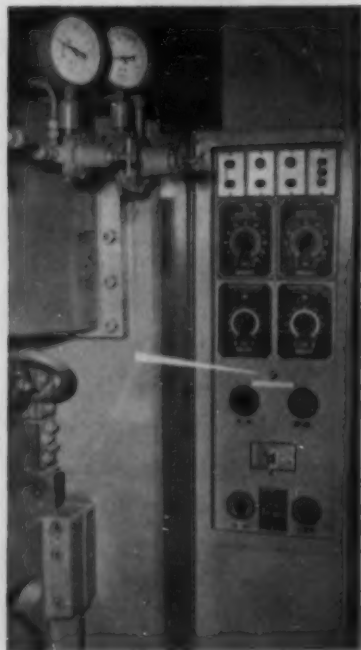
## Spot Welder Signal Light Saves Money

WHEN welding certain thin gages of aluminum alloys or stainless steel, the Sciaky three phase spot welders are operated single phase at increased voltage. The switch for this purpose is located in a locked control cabinet on the welder and is operated only by maintenance personnel. The operator could not tell the position of the switch, and when doing work involving frequent changes in gage of stock, was faced with the chance of making poor welds, or calling the maintenance men before starting each time with resultant loss of time.

With the signal light added to indicate switch position, the operator can proceed with his welding without danger of spoilage. The maintenance man is called only when a new set up is needed, thus eliminating all lost production time. The estimated saving in time and scrap loss is \$802 per year.

By F. C. CLAYTON, Chief Plant Engineer, Conair, Fort Worth, Texas.

White arrow points out the signal light that was added.



Case 65—Louisiana Drilling Platforms

## Cost Savings in Hand Welding

THESE combination a-c-d-c Idealare welders, manufactured by The Lincoln Electric Company, are used by the W. Horace Williams Company, Inc., New Orleans, Louisiana, in the production of offshore drilling platforms.

This is a new type welding machine which produces either a-c or d-c current and with which, on either a-c or d-c, both voltage and amperage can be controlled to give the best type of arc for the job, a "soft" arc or a "forceful" arc. The a-c current can be used for getting top speeds out of the new iron powder type electrodes on downhand work. A flick of a switch gives d-c current which can be used with either straight or reverse polarity electrodes for all-position welding.

With this new type welder, the fabricator makes substantial savings in the cost of hand welding through being able to select the ideal type of arc for every job.

Case 66—Kentucky

## Layout Board Saves Labor

IN Louisville, Kentucky, Tube Turns uses a plant layout board as a labor saving device and a management tool, as do many other big industries. (See photograph on front cover.) It shows every square inch of floor area, covering many acres, and gives the location and description of every piece of equipment. The scale employed is  $\frac{1}{8}$ " to 1'.

The board measures 5' x 20' and occupies most of one wall of the plant's beehive busy engineering department. It is kept current and is frequently consulted. Copies of reduced size are regularly furnished to all members of Tube Turns' management team and to key members of the plant's operating staff.

The plant layout board consists

of a plywood base overlaid with white and black sheeting, the black forming its surface. Where lines are cut in the black plastic, at  $\frac{1}{4}$ " intervals in each direction, white squares appear and represent 2' on each side. The building outlines are indicated by strips of white paper, each properly positioned.

The conventional map style is employed in identifying structural columns. That is, columns from north to south are numbered, and those from east to west are lettered. White paper cutouts of equipment, to scale, are mounted on the board and bear pertinent information. Dimensions of aisles, doorways and other physical elements are also clearly shown.

The layout board simplifies planning when new equipment is to be installed and when facilities are to be rearranged. Among many other uses is its assistance in streamlining work flow and production procedures.



## **Goodyear saves \$3,000 a day burning coal the modern way**

### **Consult an engineering firm**

Designing and building hundreds of heating and power installations a year, qualified engineering firms can bring you the latest knowledge of fuel costs and equipment. If you are planning the construction of new heating or power facilities—or the remodeling of an existing installation—one of these concerns will work closely with your own engineering department to effect substantial savings not only in efficiency but in fuel economy over the years.

### ***facts* you should know about coal**

Up-to-date coal burning equipment can give you 10% to 40% more steam per dollar • Automatic coal and ash handling systems result in a virtually labor-free plant • Coal is the safest fuel to store and use • No dust or smoke problems when coal is burned with modern equipment • In most industrial areas, bituminous coal is the lowest-cost fuel available • Between vast coal reserves and mechanized coal production methods, you can count on coal being plentiful and its price remaining stable.

Six years ago, Goodyear Tire and Rubber Co. decided to modernize its power service. Among other considerations, 70% of the firm's steam-generating equipment was over 30 years old. As a result, operating efficiency was only 65%. Power needs at Goodyear's Akron plants ran so much greater than capacity that additional power had to be purchased. Goodyear engineers and engineering consultants, Sargent & Lundy, were called in to study the problem and recommend a solution.

Now two 220,000 lb.-per-hr. boilers have replaced six 50,000 lb.-per-hr. units. Coal and ash handling are automatic. Controls are fully automatic. And not only have these and other changes resulted in dependable power service, but steam generating efficiency is now 82%—saving Goodyear \$3,000 a day. For further information or additional case histories showing how other plants have saved money burning coal, write to the address below.

**NATIONAL COAL ASSOCIATION**  
Southern Building, Washington 5, D.C.

POWELL VALVES ... THE COMPLETE QUALITY LINE ... POWELL VALVES

FIG. 3031 WE—Steel  
O.S. & Y. Globe Valve  
For 300 Pounds W.S.P.



FIG. 11303—1500-Pound Pressure  
Seal Steel Gate Valve.



FIG. 1331-A—  
1500-Pound Steel  
Integral Bonnet  
Offset Globe  
Valve.



FIG. 3059-G—300-Pound  
Steel Lubricated Plug  
Valve. Gear Operated.



POWELL VALVES ... THE COMPLETE QUALITY LINE ... POWELL VALVES

## Why Power Engineers Specify Powell Valves ...

... because they know Powell Valves are dependable and economical. Power engineers also know that Powell has the COMPLETE quality line of valves.

Investigate the many outstanding features of the Powell Valves shown here ... as well as the complete line of quality

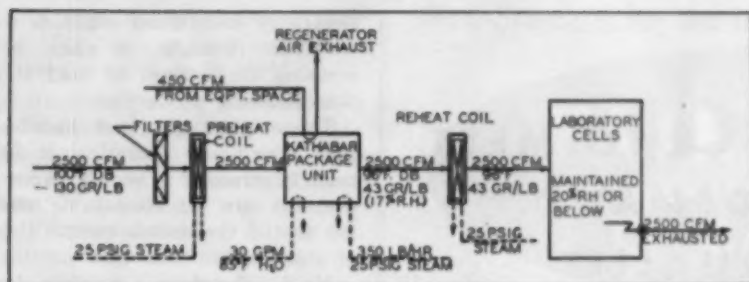
valves that have a proven record of long life and dependable service.

Consult your Powell Valve distributor. If none is near you, we'll be pleased to tell you about our complete line, and help solve any flow control problem you may have.

The Wm. Powell Company, Cincinnati 22, Ohio ..... 109<sup>th</sup> year

# POWELL VALVES





This schematic flow diagram of the Kathabar air conditioning system is based on maximum summer design. Utility requirements and the delivered air moisture content are lower when outside air conditions are less.

#### Case 67—Oklahoma

### Humidity Control

**C**ONSTANT control of humidity is necessary for rocket fuel development and testing to assure test accuracy. A chemical-type dehumidification system, used in their Bartlesville laboratory, has been found by Phillips Petroleum Company to maintain the desired conditions effectively and economically.

Initially a dessicant system was installed to maintain conditions in the laboratory cells at from 25 to 30% relative humidity. In this humidity range the moisture in the air and that in the chemicals were barely at equilibrium. This dehumidifying equipment proved unsuccessful as it could not handle the sudden, high moisture loads placed upon it.

After various other systems were investigated, a very successful chemical-type dehumidification system was installed. These units, two of which are used in the laboratory, are Kathabar Humidity Conditioners, manufactured by Surface Combustion Corporation.

The accompanying flow diagram shows one of the Kathabar systems. All fresh air is used to avoid the accumulation of rocket fuel dust on the filters or in the ductwork.

The 2500 cfm of air is shown entering the system at 100 F dry bulb and 130 grains of moisture per pound, maximum summer design conditions. This air passes through filters and enters the air washer chamber of the Kathabar unit. Both the preheat coil and the

afterheat coil are for winter operation.

Maximum utility requirements of this system are 30 gpm of 85 F water and 350 lb/hr of 25 psig steam. The unit has a wide range

#### Case 68—Mississippi

### Electrodes Boost Gas Furnace Heat

**E**LECTRICITY has solved the problem of how to get increased glass production from an existing gas-fired furnace for the Knox Glass Bottle Co., Jackson, Miss., the Southern Division of Knox Glass Bottle Co., Knox, Pa.

The furnace, which is an integral part of the entire operation, was originally designed to produce 100 tons of glass a day, and in order to increase production, it was necessary to increase the amount of heat. This they were not able to do with their gas furnace.



of turndown. When outside conditions are not at maximum design, it will deliver air at 17% RH and even much lower, still using only 85 F water. Less steam is also required when outside conditions are below 100 F and 130 gr/lb.

Since this unit has only a ¾ hp pump motor and a 1 hp regenerator air fan, operating costs compared to other systems are much less. As these are the only moving parts of the system, only routine maintenance is necessary.

Another factor in favor of this system is that there is no "carry-over" of absorbent solution in the leaving air stream. Carryover of any kind would impair the accurate compounding and testing of rocket charges.

By F. M. THOMAS, Thomas Engineering Company, Tulsa, Oklahoma.

Now, Knox has increased production considerably and is getting a better grade of glass by the recent installation of four electrodes which currently put a little over 300 kw into the furnace daily.

#### System Used

The Jackson plant already had its own distribution system, and in order to serve the furnace installation, Mississippi Power & Light Company added a separate 500 kva transformer bank. The secondary service to the furnace is three-wire, three-phase, 120 volt, delta.

The electro-melt installation required the drilling of holes in the sides of the furnace. These holes were drilled low enough so that the inserted electrodes extend right into the molten glass mass. Running water prevents the melted material from running out around the electrode, the cool liquid solidifying the glass at the entrance of the electrode.

The system consists of two electrodes in the front of the furnace and one on each of two sides. The

H. L. Robinson, engineer at the Knox Jackson plant, points to one of four electrodes which is helping his firm increase production of a better quality product.

# Geared TO MEET INDUSTRIES' DEMAND FOR HIGH QUALITY CONVEYING MACHINERY



New office and engineering building, completed early in 1955. Part of an extensive program of expansion of the engineering and manufacturing facilities at the Ellwood City, Pennsylvania, plant.

Whatever the conveying problem might be — whether it involves the handling of a few pounds or many tons — **Mathews** builds the equipment to do the job. You can be sure of this service, from proposition through installation, when you buy **Mathews Conveyers**. And, of course, you get the benefit of **fifty years' experience** in continuous flow material handling.



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CANADIAN DIVISION . . . MATHEWS CONVEYER COMPANY, LTD.  
PORT HOPE, ONTARIO

# MATHEWS

electricity flows from electrode to electrode, through the glass, increasing the amount of heat and thus boosting production.

The original gas heat installation, which was operating at its peak, is arranged in such a manner that the gas jets blow flame over the top of the molten composition of glass ingredients.

H. L. Robinson, engineer for Knox's Jackson operation, says that it is easy to see why the addition of all this electricity has enabled them to increase the amount of heat and the total production of the bottle plant, but they have not been able absolutely to determine the reason for the better quality they are now getting, using the same composition of materials.

"Perhaps the fact that the glass mixture actually carries the current may in some way affect the molecular structure," Mr. Robinson stated.

Regardless of the condition causing this phenomenon, Knox has found that the new heating arrangement gives a more pliable raw material, and an over-all better quality of glass.

## Case 69—Tennessee

### Bagging Rates Up 100%

A RECORD has been established at the Knoxville Fertilizer Co. for bagging fertilizer. With a new installation at the Knoxville, Tennessee, plant two men can now bag



with acceptable accuracies as many as 16½ units per minute, an increase in rates up to 100%.

Handling the new fast-dissolving pulverized type of fertilizer, the plant was gravity-feeding the product, sacking it in valve bags. However, it was difficult with this system to increase speed without impairing accuracy because of the nature of the product. The material is particularly hard to get moving from a bin, and then it's hard to stop.

If the company was to achieve the target of 16 bags per minute that it wanted, an improved method would be required. Accordingly, Richardson Scale Co. was called on to revamp the weighing system. To get higher speeds, Richardson engineers installed a 9-in. single-screw feeder overhead to replace the gravity-feed system and a standard Richardson E-50 automatic scale.

Upshot is that Knoxville is now bagging 15 100 lb bags per minute of its lightest fertilizer, and 16½ 100 lb bags per minute of a slightly heavier product, thus attaining a new bagging record for the plant.

#### Case 70—North Carolina

### Booster Heater for Drying Box

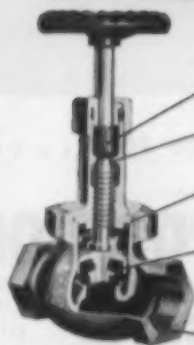
A HEAT-PACK far-infrared radiant heater frame has been used in a large North Carolina finishing plant to increase production by as much as 42.8%. The initial capital expenditure was much lower than any other means for obtaining this increased production. It has been determined that the operating cost is competitive with steam if the electric energy cost is in the range of approximately ¾ of a cent per kilowatt hour.

In this finishing plant, a steam heated loop drying box had a drying capacity of 900 lb of moisture per hour. It was desired to increase this drying capacity by at least 25%. After the Heat-Pack Far-Infrared radiant heater frame had been installed, production run measurements showed that the overall drying capacity had been increased to 1284 lb of moisture per hour.

## New Standard for the Industry

# FAIRBANKS

underwriters approved  
LP-Gas Valves



**Tight**—deep stuffing box filled with special reinforced packing for LPG service — treated with proper lubricants and surface graphited for minimum stem friction.

**Tight**—protected top seat above threads out of line of flow permits repacking of stuffing box when valve is wide open and under pressure.

**Tight**—Fairbanks radial seat of two piece union bonnet. Machined to a true ball and socket joint, assures a leak-proof body bonnet joint and rigid alignment of the working parts of the valve.

**Tight**—Fairbanks 360 Special Synthetic Disc, Underwriters approved for use with butane or propane in the liquid or gaseous state, combines toughness and resilience through temperature range of —50° to 150° F. for positive sealing in gas service. Disc Replacement easily and quickly accomplished with Fairbanks Slip-On Holder.

#### Service Recommendations:

These valves are recommended for all common commercial forms of liquefied petroleum (butane-propane) gases whether handled in liquid or gaseous state. They are designed for application on all types of piping systems for storing, transporting and utilizing these gases, and demonstrate excellent efficiency on hot or cold water, compressed air, gasoline, light oils, volatile fluids, and other services operating within their pressure and temperature ratings.

**Tight**—heavy, well-proportioned body will withstand all ordinary pipe strains without distortion. Heavy hex nut ends with greater length to pipe threads will take wrench abuse and resist deformation.

**Gate Valves** — with metal to metal seat are approved by the Underwriters for use only in branch or by-pass lines where positive shut-off is not essential.

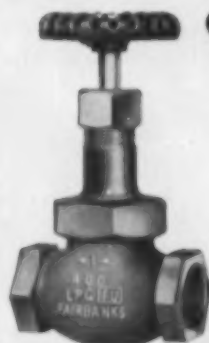


FIG. 1101—Globe  
Sizes ¼"–2"

FAIRBANKS



FIG. 1102—Angle  
Sizes ¼"–2"

#### Working Pressures

Oil or Gas 400 lbs., 150° F. max. temp.  
Water 400 lbs., 200° F. max. temp.  
UL Approved for LP-Gas up to 250 lbs.



FIG. 1103A—Check  
1103—Check—Spring Loaded  
Sizes ½"–2"



FIG. 1104—Gate  
Sizes ½"–2"

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**WHEN?** . . . November 14-18, 1955.

**WHY?** . . . This special show is in conjunction with the 75TH ANNIVERSARY MEETING OF THE ASME. The significant theme of these sessions is "THE ENGINEER AND THE WORLD OF COMMERCE AND INDUSTRY." Subjects of vital importance to your field of interest will be covered. At the EXPOSITION, you'll see the newest, most advanced power equipment . . . manufacturers' exhibits that will show hundreds of new techniques to improve productivity and economy, and to utilize all types of power more effectively.

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*(Under the auspices of the ASME, and in conjunction with its 75TH ANNIVERSARY Meeting)*

*For advance registration, write The Management:*

### INTERNATIONAL EXPOSITION COMPANY

480 Lexington Avenue

New York 17, N. Y.

This is an increase of 42.8%.

The Heat-Pack includes Chromalox Far-infrared electric radiant heaters as a source of very intense heat to dry the material at a very rapid rate. Provision is made in the Heat-Pack for automatically removing the heat if the material is stopped for any reason. The Heat-Pack is a complete package including all necessary mechanical accessories and electrical control equipment assembled together before shipment is made to the user. For that reason, the installation of the equipment is very simple and very inexpensive.

This equipment has been very successfully applied also to slashers, tenters, and for such applications as heat setting nylon and for curing resins and other materials. Heat-Pack is manufactured by Southern Machine Products, Inc. and engineering sales are handled by Ranson, Wallace & Co., Charlotte, North Carolina.

#### Case 71—North Carolina

### High Temperature Water Heating System

A NEW plant for the manufacture of Chipboard was recently built in North Carolina.

Chipboard is processed in a hot plate press by the application of heat and pressure. Temperature requirements are in excess of 300 F.

For best product quality and speed of production, it is important that the heat be transferred to the hot plates rapidly and efficiently with good temperature control. It is also necessary that the temperature across the surface of the hot plates be uniform. For these reasons, it was decided to use high temperature water under pressure as the heating medium instead of high pressure steam.

High temperature water heating offers many advantages over steam heating among which are:

- a) Ability to control temperatures to extremely close tolerances.
- b) Forced circulation through the hot plates affords surface temperature uniformity across the hot plate surface.
- c) The closed circuit reduces heat losses to a minimum, eliminates ex-



## BEFORE YOU BUY A PACKAGE BOILER

# CHECK THIS LIST!

If you need a package boiler, the list at the right can give you some interesting answers. Of course, C-E's Type VP Boiler rates a "yes" answer to every question. It offers also many other operational advantages, such as simple, effective soot blowing; high heat absorption; low draft loss, no dead gas pockets and simple baffle arrangements.

That's why VP purchasers range from small companies to some of the nation's largest — plus schools, institutions, government agencies, including the Atomic Energy Commission. These users employ VP Boilers for all types of applications — heating, process, even power generation.

### SPECIFICATIONS OF THE VP BOILER

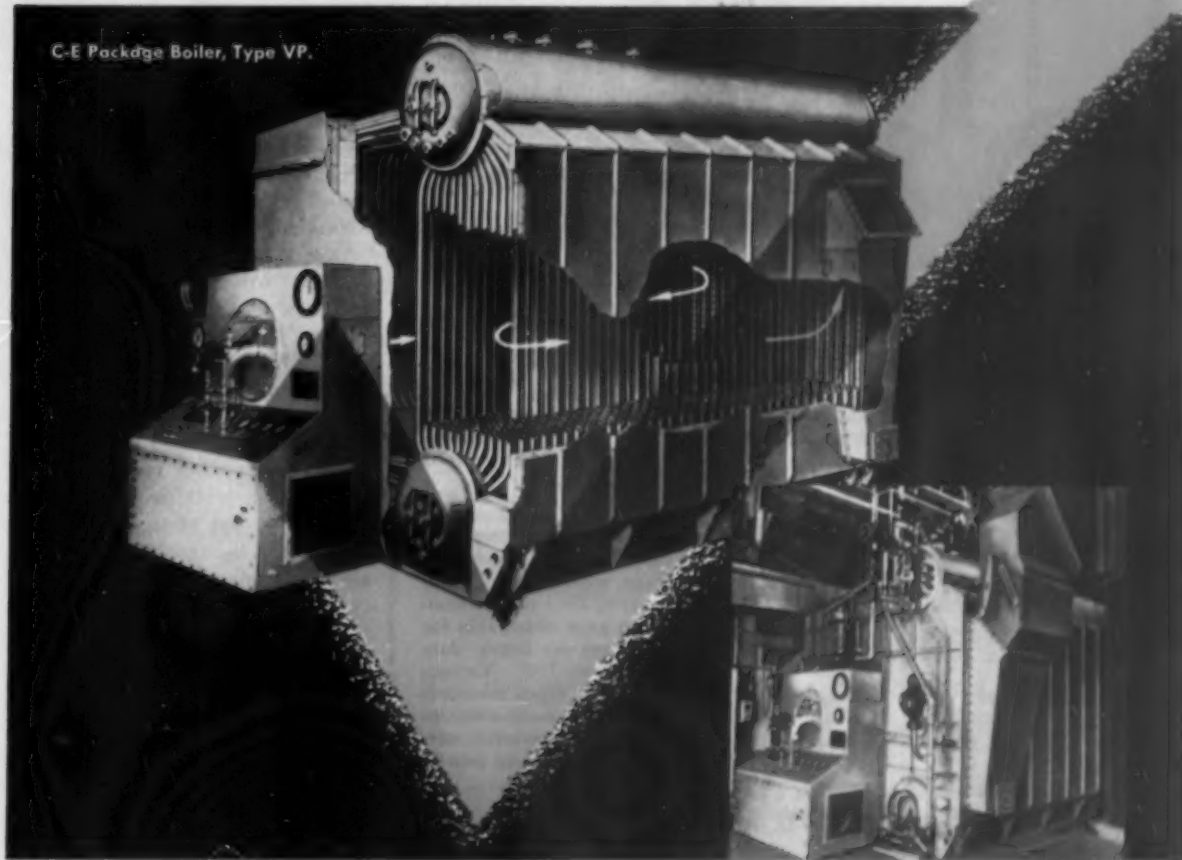
Capacity — 4,000 to 40,000 pounds of steam per hour  
Pressures — up to 500 pounds per square inch  
Fuel — oil or gas  
Erection — completely shop-assembled  
Foundation — simple concrete slab

Have full details on the VP next time you are in the market for a boiler of moderate capacity. Get the new Catalog VP-258, which contains specifications, and information on dimensions, construction details and controls.

B-845A

	BOILER					
	A		B		C	
Will your boiler be a real "package" type with control panel and all controls mounted integral with the boiler?	Yes	No	Yes	No	Yes	No
Will your package boiler be equipped with drum internals to assure dry steam?						
Will its "steam quality" be backed with a guarantee?						
Will your boiler have a 30-in. lower drum to provide convenient accessibility?						
Will yours be a one-burner boiler, with a simple wiring and control system?						
Will your boiler have the largest load swing range available?						
Will your boiler be equipped with a quiet centrifugal fan?						
Will your furnace be completely water-cooled?						
Will your furnace have the highest ratio of water cooled surface to furnace volume?						

C-E Package Boiler, Type VP.



## COMBUSTION ENGINEERING

Combustion Engineering Building • 200 Madison Avenue, New York 16, N. Y.

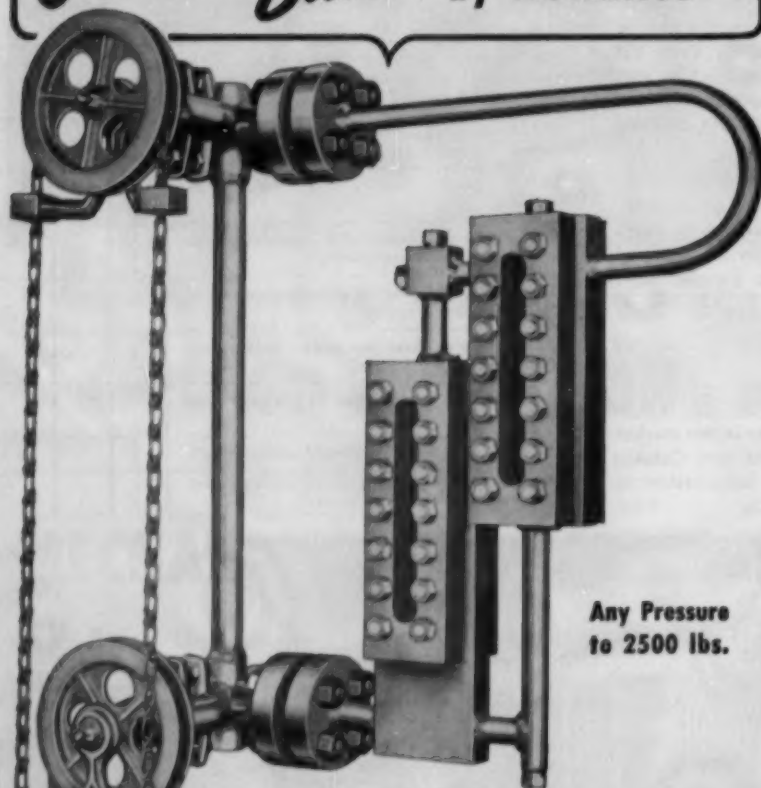


BOILERS, FUEL BURNING & RELATED EQUIPMENT; PULVERIZERS, AIR SEPARATORS AND FLASH DRYING SYSTEMS; PRESSURE VESSELS; AUTOMATIC WATER HEATERS; SOIL PIPE

SOUTHERN POWER & INDUSTRY for OCTOBER, 1955

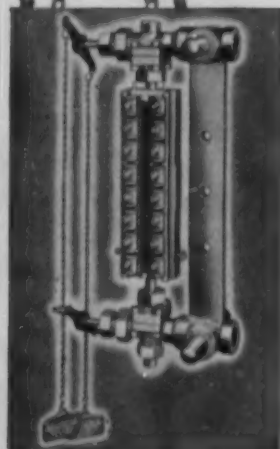
# Direct-to-Drum Gage Assemblies

## *Custom Built* by Reliance



Any Pressure  
to 2500 lbs.

**Rugged construction in expansion or "L" and types for highest safety and low maintenance**



Made to fit individual needs, Reliance direct-to-drum assemblies meet highest engineering and construction standards. Reliance all-welded gage assemblies have more than sufficient ruggedness for severest conditions. Each unit is tested at well over 50% overload before it leaves the factory.

In the expansion tube type, a sturdy tie-tube is welded to both gage valves for rigidity between boiler connections. Gage windows are Mica-protected flat glass (to 1500 lbs.) or non-shattering Micasight — safest gage obtainable for the higher pressures. Valves — heavy duty forged steel, temperatures to 750°. Various combinations possible in other types, pressures 900 to 2500 lbs. Efficient illumination equipment available, including the powerful mercury lamp type. Write the factory or nearest Reliance Representative.

The Reliance Gauge Column Co., 5902 Carnegie Ave., Cleveland 3, Ohio

# Reliance

**BOILER SAFETY DEVICES**

pense of continual feed water treatment, and eliminates scaling and corrosion within the system.

d) All traps, strainers and pressure reducing valves which are a continual source of maintenance in a steam system are not required in the high temperature water circuit.

American Hydrotherm Corporation are leading exponents of high temperature water heating and specialize in engineering and design of such systems, and were responsible for the installation.

### Case 72—Fabricating Plant

## After Cooler Reduces Rejects

A SOUTHERN drum fabrication division of a national steel corporation was having a large number of rejects. Bad pitting of the final lining material which was sprayed on by means of compressed air, was the sore spot. The cause was determined as moisture present in the compressed air lines.

Corrective action was taken by installing an Adams Pipe Line Aftercooler. This unit, installed between the compressor and the receiver, brings the air temperature down to within 10 F. of the cooling water. The water vapor and oil fumes present in the compressed air are condensed, then removed by an Adams Cyclone Separator.

Results of this corrective action were gratifying. Within one month the cost of the aftercooler was saved by the elimination of all rejects due to faulty lining.

### Case 73—Tennessee

## Acid Salts Removed by Filters

A SYNTHETIC yarn mill in Tennessee was having short production runs and considerable trouble because of the presence of precipitated acid salts and fines in their spinbath solution.

Initial efforts to solve the problem involved the use of a conven-

tional filter with cloth bag-type elements. While improving the situation, the elements quickly became clogged and then the production run would have to be shut down while the filter was disassembled and serviced.

Finally, the R. P. Adams Company, Inc., was approached on the problem. A complete filter system was designed for the application. The system consisted of two Adams filter plants installed in parallel so that continuous filtration could be maintained. Each plant consisted of an Adams CFL Poro-Stone Filter, and filter-aid feed system.

The filter-aid feed system adds a small amount of diatomaceous earth to the solution being filtered, producing a much longer filtration cycle.

#### Case 74—Texas

### No Stuffing Box Leakage

ONE of the important producers of "cold" GR-S rubber in this country is a plant near Houston, Texas.

In this plant butadiene and styrene, with a number of other ingredients, and a catalyst, are polymerized in a continuous reaction in a series of 12 glass-lined vessels. The vessels are jacketed, and are cooled by circulating calcium chloride brine to hold the temperature to 41 F.

Approximately 60% of the butadiene and styrene is converted to synthetic latex in this reaction.

Throughout this plant Goulds pumps, many of them stainless steel, are performing important materials-handling functions. Although spares have been installed in all places where breakdown of a pump would seriously interrupt production, they have been used only while the other pumps were being inspected or repacked.

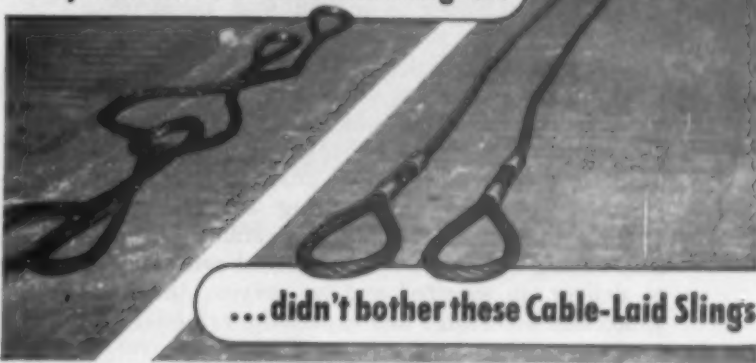
Since these Goulds pumps have only suction pressure on the stuffing box or shaft seal, the problem of leakage through the glands is virtually eliminated, according to the Goodyear maintenance engineers. This is an important advantage in the handling of such highly flammable materials.

**ACCO**  
products

## This 34-Ton Load...



badly kinked these Braided Slings...



...didn't bother these Cable-Laid Slings

## Here's Why:

Because these ACCO Registered CABLE-LAID slings combine the flexibility of manila rope with the strength of steel.

The secret of the CABLE-LAID sling is in the construction of the rope. It's a combination of six wire ropes laid around a special steel center to give you a rugged steel body which has:

- Freedom from Crankiness
- Extreme Flexibility
- Resistance to Kinking

With their patented DUALOC endings these CABLE-LAID slings are tops in ease of handling... resist abuse... and give you longer sling life which reduces lifting costs. And these slings are ACCO Registered—with all the advantages that make this specification the standard of efficiency and safety.

See your ACCO Registered distributor or write our Wilkes-Barre, Pa., office today

**ACCO**



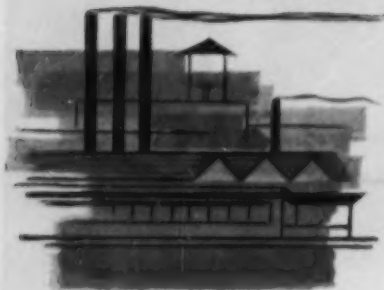
**Wire Rope Sling Department  
AMERICAN CHAIN & CABLE**

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for  
**Better  
Value**



## When Production Depends on METAL PROTECTION



— as in chemical or food processing where corrosive attack can cause both equipment breakdown and material contamination.

— in the textile industry where air-conditioning equipment performance is a major production concern.

— wherever manufacturing processes demand the ultimate in protection for new metal or old, in exposures ranging from atmospheric to immersion, at temperatures low to high —

## Industry Depends on DAMPNEY PROTECTIVE SURFACING

Keeping industrial equipment functioning at new-metal peak efficiency is a task first assigned to Dampney almost fifty years ago. The original Dampney coating, Apexior Number 1, has served continuously ever since in boilers and associated steam generating equipment — nucleus of a corrosion control program that today encompasses equipment in every power and processing category. Dampney coatings and coating systems utilize vinyls, epoxys, neoprene, silicones, ceramics, chlorinated rubber — the best of the newest synthetics — to deliver, in specified end-use service, the finest protection knowledge and experience can offer.

*As near as your nearest Dampney representative — corrosion-control know-how that is yours to call upon freely. For a prompt, intelligent appraisal of your requirements, consult in*

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Spotswood Parker and Co.

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Baltimore Copper Paint Co.

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Allied Services, Inc.

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MAINTENANCE  
FOR METAL



THE  
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COMPANY

HYDE PARK, BOSTON 36, MASSACHUSETTS

## Equipment Supplies and Methods

### Pipe Vise

K-1

ERIE TOOL WORKS, Erie, Pa., has announced a new "Pipemaster" vise which automatically adjusts on pipe from  $\frac{1}{8}$ " to  $2\frac{1}{2}$ ", and clamps on it with less than one turn of the screw.

In addition to this "quick-acting" feature, the vise features the 3-way, tool steel top jaw with milled teeth, reversible jaws, and vertical benders on both sides of the base. You can attach the vise to any corner of the bench and see the bend.

### 4-Star Lug Nut Union

K-2

CATAWISSA VALVE & FITTINGS Co., Catawissa, Pa., has introduced a new four-lug Lug Nut union called Catawissa 4-Star Hammer Type lug nut union.



The new product is being made in 2 in. to 4 in. sizes, inclusive, and features speedy make or break for "hard-to-get-at-places." The new Union incorporates an exclusive combination of both lug and hexagonal shaped nuts with regular or double-start Acme threads, for fast make or break with either a hammer or wrench. The Catawissa lug nut design provides a straight, flat striking surface that eliminates the chance of a damaging, glancing hammer blow.

### FOR FREE INFORMATION

Circle Code Number  
on Pages 16 & 17



### Aluminized Pipe Jacketing

**K-3** UNITED STATES RUBBER COMPANY, Textile Division, Rockefeller Center, New York 20, N. Y., has developed aluminized pipe jacketing which is resistant to fire, acid and water.

Made of aluminum foil laminated onto vapor-proofed asbestos cloth, it can be used to cover pipe insulation in heating, piping, refrigeration and air conditioning systems in electric utility and industrial plants and commercial and institutional buildings. Called Asbestos pipe insulation jacketing, it requires no painting.

The aluminized jacketing is easily cleaned and does not absorb odors, properties which suit it for use in breweries, food processing plants and laboratories. A square yard weighs 12 ounces, compared to standard weights of 22 to 36 ounces per square yard for asbestos jacketing cloths in general industrial use.

### Hot Process Hot Zeolite Water Conditioner

**K-4** COCHRANE CORPORATION, Philadelphia 32, Pa., announces that exceptionally pure water for boiler feed and process use is achieved at unusually low cost through use of the Cochrane Hot Process Hot Zeolite Water Conditioner.

This water conditioner combines a hot process softener with a hot zeolite softener. The two-stage system is the result of comparatively recent developments in ion exchange resins which permit the operation of zeolite softeners at temperatures up to 250 F.

Cochrane states that the Hot Process-Hot Zeolite combination requires a lower capital investment than a comparable two-stage Hot Lime Soda Hot Phosphate Softener. Chemical costs are also lower since the Zeolite Softener uses salt for regeneration instead of more expensive soda ash and substantially reduces supplementary phosphates. The softening operation is simplified and reliable and compensates for variation of hardness in the influent water.

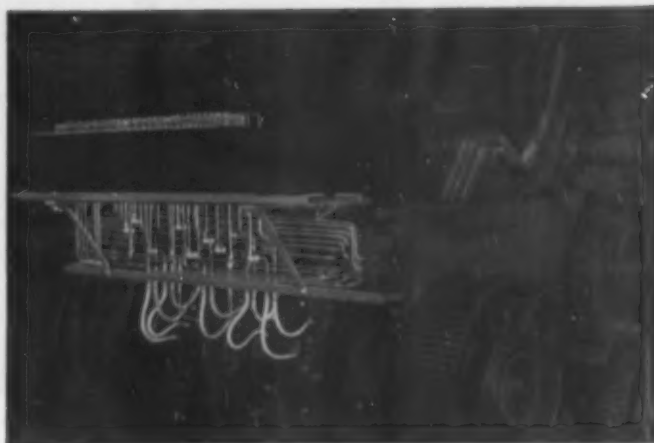
This combination of the two most popular methods of water softening also more effectively lowers the silica content of the treated water. It also reduces alkalinity of the effluent to approximately half the value attained by hot process softeners, with a consequent reduction of carbon dioxide in the steam.

# MANZEL

## FORCE FEED LUBRICATORS

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*than doing without them!*



**Pressure Application — Exact Amounts — Accurately Timed**

\* Manzel Force Feed Lubricators quickly save their cost by preventing breakdowns due to faulty or forgotten lubrication — by reducing the quantity of lubricants used — and by eliminating the labor of hand oiling. They keep vital parts properly lubricated for uninterrupted production efficiency round the clock.

You can have Manzel Force Feed Lubricators installed on present equipment or engineered into new machinery. Write for information.



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**OF dust...**



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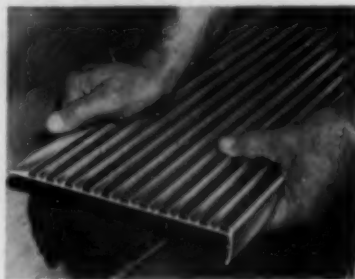
POWER DIVISION: Tubular Dust Collectors, Forced Draft Fans, Air Preheaters, Induced Draft Fans, Fan Stacks

## **new equipment (continued)**

For more data circle item code number on the postage free post card — p. 17

### **Aluminum Safety Treads**

**K-5** WOOSTER PRODUCTS INC., Wooster, Ohio, recommends that worn stairs be leveled and made non-skid through the application of "Stairmaster" extruded aluminum safety treads. Not only will the stairs be made slip proof, but the heat-treated aluminum treads will add beauty to the stairs.



Eleven abrasive ribs dovetailed into the "Stairmaster" safety treads insure their slip-proof quality. Repairing treads in this manner is less expensive than replacing the worn treads themselves and rebuilding the stairway. The new treads come in a standard width to fit all stairs. The treads are drilled for easy installation, and the manufacturer can also provide leveling compound for leveling worn steps.

### **Cable Splicing Tapes**

**K-6** THE OKONITE COMPANY, Passaic, N. J., has developed a new line of cable splicing tapes for use with standard steam or electric vulcanizers. Known as Okonite Vulcanizer Tapes, the complete line includes rubber insulation, rubber sheath and colored neoprene sheath tapes that are simple to apply and vulcanize easily into void-free splices equal mechanically and electrically to the cable itself.

Developed originally to withstand the rough treatment given portable cables, Okonite Vulcanizer Tapes may be used wherever the immediate, added protection of a vulcanized splice is desired in permanent or fixed cable installations. These tapes are compounded for maximum electrical strength and mechanical toughness and are supplied in a standard one-inch width for easy application.

The rubber insulation tape is gray and the rubber sheath tape is black. The neoprene sheath tape is available in black, red, yellow and green for simplified identification and color-coding. All colors provide the lasting protection of an abrasion and moisture-resistant neoprene sheath that can be permanently bonded to the neoprene sheath of any cable. Circle the above code number (page 16) for samples of the tapes and a copy of Bulletin 5505 which gives details and instructions for use.

### Smoke Density Indicator

**K-7** ELECTRONICS CORPORATION OF AMERICA, Combustion Control Division, 718 Beacon St., Boston 15, Mass., has introduced the Fireye Smoke Density Indicator System FE-3 which makes available to industry a new and more efficient method for keeping smoke discharge within limits of all smoke control and air pollution ordinances.

For use with the system, three smoke density recorders are available. The system consists of a light source, a photoelectric scanner, and a smoke density indicator. Light source and scanner are installed on the stack or breeching so that the light beam is aimed directly at the lens of the scanner. The density of smoke obscuring the light beam is accurately measured and indicated directly on the smoke density indicator in terms of both smoke density and Ringelmann Number. An alarm relay provides for the operation of an external alarm at any present value of smoke density.

One of three Series 55 recorders may be used with the new indicator system to make continuous recordings of smoke conditions over a 24-hour period. The 55AKI Smoke Time Recorder is a single pen unit and records periods of excess smoke on a twelve-inch chart. It shows both time and duration of excess smoke over a preset valve. The Type 55ALI Smoke Time Recorder provides eight-inch chart records of time and duration of excess smoke from two or more smoke density indicators. The Type 55AMI Smoke Density Recorder provides a continuous record of smoke density directly on a twelve-inch chart. It is calibrated to record the precise Ringelmann Number of the smoke condition.

For more data circle item code number on the postage free post card — p. 17

# BELMONT PACKINGS

## for WATER...STEAM...OIL...



**BELMONT 9**... for all hydraulic services from low pressures to extremely heavy duty, hot and cold water.

**BELMONT 19**... for hot and cold water rods and plungers; low and intermediate steam rods.

**BELMONT 30**... for high pressure steam rods, expansion joints, air, and gas.

## for better sealing — LONGER

Regardless of the temperatures or pressures involved... no matter what the loading... your equipment maintenance costs can benefit from longer, more dependable packing life. If you're paying for the best — and you probably are — make sure you get it by specifying BELMONT Packings in formulations suited to your particular needs.

Don't make do with the next best — insist on BELMONT... available in a wide range of materials... hundreds of styles and types... through distributors everywhere. When it SEALS right — stays TIGHT... you know it's Belmont made.

CLIP and Send Coupon

4 R-5

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## Equipment . . Supplies . . Methods (Continued)

### FOR FREE INFORMATION

Circle code number on pages 16 & 17

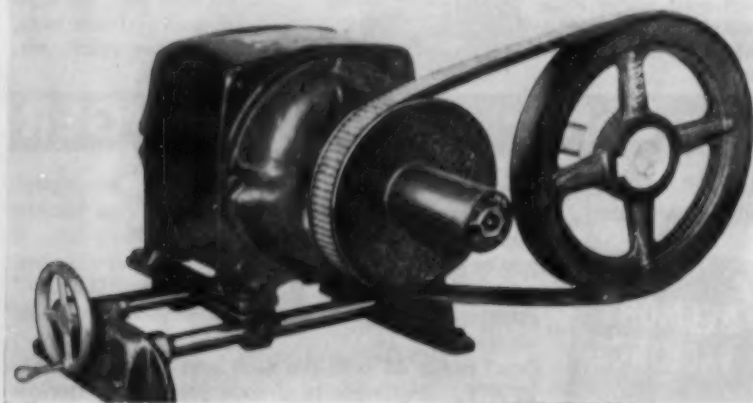
#### Water Softener Controls

K-8

GRAVER WATER CONDITIONING Co., New York, N. Y., has developed a new automatic control system for tank zeolite softeners. This system is part of a completely pre-engineered zeolite softening unit including electrical control panel, flow meter, automatic multi-port valve, zeolite softeners, brine measuring tanks and connecting lines.

The outstanding feature of this system is a new, electrical control panel containing a series of relays and multiple-cam timer which initiate periodic, timed regeneration of the softeners.

Incoming raw water is measured by an inlet water meter register. When a predetermined volume of water has passed through the meter, a contact automatically closes beginning the regeneration circuit. One relay is immediately locked in while another is locked out so that only one softener will be regenerated at a time. This relay in turn starts the timer motor which rotates a cam shaft through a series of switches, each of which positions the multi-port valve for successive backwash, inject-displace, rinse and service operation. Rotation of the valve port for these four positions is accomplished by a lift-turn arrangement consisting of a spiral grooved, guided shaft and attached diaphragm assembly.



#### Variable Speed Pulley

K-9

LOVEJOY FLEXIBLE COUPLING Co., 4811 W. Lake St., Chicago 44, Ill., has introduced a new variable speed pulley that provides ratios up to 3 to 1 at from 7½ to 15 horsepower.

The pulley is easily and quickly installed on new or old equipment. It changes speed at finger-tip pressure while machinery is in motion. This labor and time saving feature is especially valuable where quick changes to compensate for operator ability,

corrections for size or density of parts or stock, or adjustments for temperature or humidity are required.

Used in conjunction with 1750 rpm motor, maximum hp is 10 with the No. 310 VSP base and 15 with the No. 315 VSP base. The 1150 rpm motor affords 7½ hp with the No. 310 and 10 hp with the No. 315. Belt accommodated is Lovejoy No. 27, 2½ in. top width variable speed belt. Standard bores are 1¼, 1½, 1¾ in. Other specifications include 13.1 max and 4.35 min pitch diameter, length of bore 3¼ in. and max bore 1½ in.

#### "Packaged" Chemical Feed

K-10

PHILADELPHIA PUMP AND MACHINERY, subsidiary of AMERICAN METER Co., 1513 Race Street, Phila., Pa., is offering "Packaged" Chemical Feed Systems for general water treating requirements and for individual chemical processing needs.

The units, for proportioning either one or two different chemicals into the plant system, are complete with single or divided tanks of from 25 to 200 gallon capacity equipped with simplex or duplex Phila-Feeder Pumps for accurate proportioning of from a few cc to 18.6 gallons per hour. They are ready for connection to regular plant chemical feed piping and electrical circuits.

Special manual or automatic control equipment is available to meter chemical flow in exact ratio to specific requirements of boiler water feed or chemical process reaction.

#### Aluminum Chain Blocks

K-11

SHAW-BOX CRANE & HOIST DIVISION OF MANNING, MAXWELL & MOORE, INC., Muskegon, Michigan, has announced the marketing of a line of lightweight, highly portable aluminum chain blocks.

Known as the 'Budgit' "Hi-Cap" Aluminum Chain Blocks, they are available in 3, 4, 5, 6, 8 and 10 ton capacities and were developed especially for rugged service where low headroom, portability and ease of operation is required.

#### Asbestos Sheet Packing

K-12

THERMOID COMPANY, Trenton, N. J., is providing a new asbestos sheet packing to handle the gasket requirements of industrial plants of all types, mines, railroads, ships and institutions.

Designated as No. 90, this sheet packing is suitable for handling steam, hot and cold water, brine, air and oil up to 300 psi and 500 F. Average tensile strength of cross-laminate material is 4500 psi and for homogenous packing 3000 psi.

No. 90 packing is made in three thicknesses: 1/32 in., 1/16 in. and ¼ in. It comes in three sheet sizes and weighs 2.6 lb per sq yd in the 1/32 in. thickness.





**PHYGON-XL is a low-cost and effective control for the most troublesome nuisance organisms in water—Algae.**

Algae in an industrial water system can have far reaching effects on acidity, on outlets, inlets, filters and pipes in a distribution system. Use Phygion-XL to eliminate these troublesome factors. Added directly into the system at a rate of four pounds per million gallons of water, PHYGON-XL reduces over-all purification costs and the frequency of cleaning or back-washing filters.

Using PHYGON-XL to suppress blue-green Algae

blooms in lakes, ponds and reservoirs, also provides an opportunity for the vigorous growth of helpful aquatic plants. It can be mixed with water and applied as a spray over the area to be treated—about one to five pounds of PHYGON-XL per acre of water surface.

You'll find PHYGON®-XL is: effective, easy to use, and inexpensive. Write, wire or phone us if you are unable to locate an immediate source of supply.



# Naugatuck Chemical

Division of United States Rubber Company  
Naugatuck, Connecticut



producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygion, Aramite, Synkior, MH, Alanap, Durasol.

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**Basic information on the fundamentals of electricity  
for the first time available in ONE Volume!**

A limited edition of this important handbook has just been printed and is available to subscribers to SOUTHERN POWER AND INDUSTRY only. Order your copy NOW with a new or renewal subscription to this magazine.

A series of seven articles, "Electricity and Electrical Power" by Roy W. Wages, industrial engineer for Georgia Power Company, was published last year in SOUTHERN POWER AND INDUSTRY and received wide attention and favorable comment from plant engineers in the South and Southwest.

Demands for reprints of this series became so great that we have had all the articles bound in one volume. This useful 72-page book is now available to SOUTHERN POWER AND INDUSTRY subscribers exclusively.

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plaining and defining a volt to a discussion of the sine curve of alternating current motors. The book is liberally illustrated with diagrams and pictures which help make the text crystal clear. Throughout the pages, the author does everything possible to simplify the presentation of facts for easy study and understanding.

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806 Peachtree Street N. E.

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## new equipment (continued)

For more data circle item code number  
on the postage free post card — p. 17

### Stepless Speed Control

**K-13** AMERICAN BLOWER CORPORATION, Detroit 32, Mich., has introduced a new line of enclosed, completely self-contained fluid drives featuring stepless speed control, no-load starting and excellent torque limiting control for smooth transmission of power in power plants, refineries, steel mills and a wide variety of other general industrial applications.

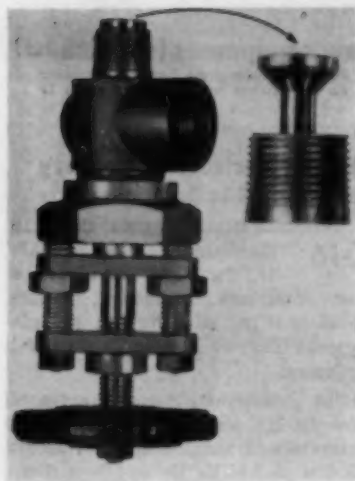


Designated the Type VS Class 2 Gyrol Fluid Drive, the new units are available for a wide range of speed adjustment on both variable and constant torque loads. The units are designed for dual rotation, thus the Class 2 Fluid Drive and load can be reversed while in motion by merely reversing input rotation when used with an electric motor.

The new drive permits the motor to come up to speed under practically no-load conditions. This allows simplification of motors and starting equipment for heavy starting loads. Across-the-line starting is practical in many cases. The new fluid drive units will limit the amount of overload torque which can be transmitted to the load. Torque transmitting capacity is adjusted by positioning the speed control lever. Rate of movement of the same lever governs acceleration rate. The drive is readily adaptable to manual or fully automatic control.

### Drain or Sampling Valve

**K-14** JERGUSON GAGE & VALVE Co., Somerville 45, Mass., has introduced a new drain or sampling valve which is completely self-draining, because the valve stem seats on the outside of the valve body. It is recommended for installations where it is desirable to have the valve seat inside the wall of a vessel in order to prevent liquid



from remaining in the nipple and valve.

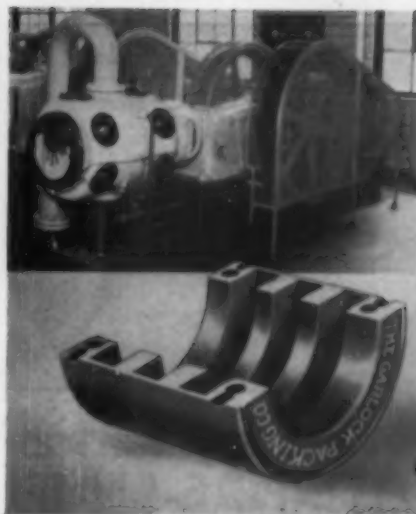
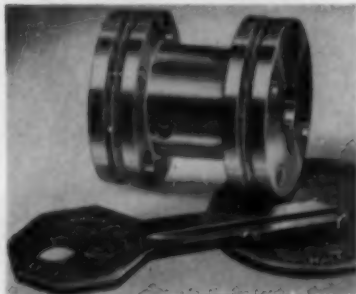
The valve has outside screw and yoke construction to meet high temperature or corrosive conditions where inside threads cannot be tolerated.

The No. 23 valve is recommended for pressures up to 4000 lb at 100 F or 1000 lb at 750 F. Standard materials are carbon steel body, stainless steel stem, and Stellite seat. Optional materials include various special alloys to meet corrosive or other troublesome conditions.

#### Small Flexible Coupling

**K-15** THOMAS FLEXIBLE COUPLING Co., Warren, Pa., has developed a "Flea" power coupling intended for use in servomechanisms, miniature mechanical drives and similar applications.

This flexible coupling is lightweight (28 weigh slightly less than a pound) and small. It is of non-magnetic construction. The coupling has no sliding parts, a feature which holds backlash to a minimum. Crosspull and end thrust on connected shafts are practically eliminated by the flexibility of the coupling. Torque rating for the unit is 50 inch-ounces at speeds up to 50,000 rpm.

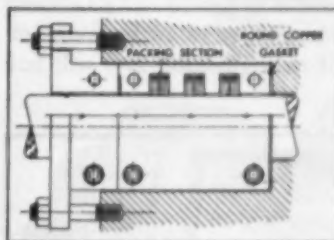


Left: Reciprocating air compressor

Below: Garlock 809 Floating Metal Packing split-case design



## For air compressors, users report GARLOCK SPLIT-CASE METAL PACKINGS have 2 big advantages



1. **LONG, TROUBLE-FREE LIFE.**  
Minimum of 7 years with proper lubrication.
2. **CAN BE INSTALLED WITHOUT DISCONNECTING THE ROD.**  
Downtime is reduced to a minimum.

You can eliminate the cost of frequent packing replacements and unnecessary downtime by installing Garlock split-case metal packings on your reciprocating air compressors. Service reports show that these Garlock metal packings have given 15 years and more of trouble free service with a minimum of rod wear.

For complete information, call your Garlock representative or write today for Brochure 3889.

#### THE GARLOCK PACKING COMPANY, PALMYRA, N. Y.

Sales Offices and Warehouses: Baltimore, Birmingham, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Denver, Detroit, Houston, Los Angeles, New Orleans, New York City, Palmyra (N.Y.), Philadelphia, Pittsburgh, Portland (Ore.), Salt Lake City, San Francisco, St. Louis, Seattle, Spokane, Tulsa.

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.



# GARLOCK

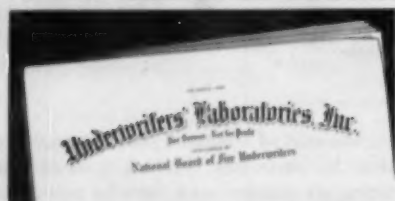
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## In Hazardous or Coded Areas Specify RESOLITE FIRE-SNUF The Only Fiberglass Panel Labeled by Underwriters'

Fire-Snuf Panels are the *first and only* translucent, fiberglass-reinforced panels to be listed by Underwriters' Laboratories, Inc. They carry the UL label as evidence that they have and are continuing to meet Underwriters' rigid specifications.

They should be specified for skylights, sidewalls, partitions and glazing where fire hazards are unusual or codes call for a flame spread rating of below 75. This rating is equivalent to the Building Officials Conference of America (BOCA) classification of "slow burning" or "fire retardant." These panels are self-extinguishing and will not support combustion.



Complete test reports on the fire hazard classification of Fire-Snuf by Underwriters' Laboratories Inc., are available from the manufacturer on request.

Made with fire-retardant Hetron\* polyester resin, Fire-Snuf panels retain all the best features of standard Resolite—shatterproof safety, strength, translucence, stability and load bearing characteristics.

\*© Hooker Electrochemical Co.

Fire-Snuf is molded in flat panes for glazing and in all standard Resolite corrugations in lengths up to 13 feet and widths up to 42 inches. For additional information consult your distributor or contact



**RESOLITE Corp.**

Box 531, Zelienople, Pa.

Office and Warehouse, CHICAGO, ILL.

Export Office, HOUSTON, TEXAS

Distributors in principal cities, U. S. and Canada



### new equipment (continued)

For more data circle item code number on the postage free post card — p. 17

#### Remote Electronic Secondary Liquid Level Indicator

YARNALL-WARING Co., 116 K-16 Mermaid Ave., Philadelphia 18, Pa., has introduced a new electronic secondary remote liquid level indicator for use with the primary Yarway Remote Liquid Level Indicator.

The primary indicator is actuated directly by manometric differential pressure and meets the requirements of the A.S.M.E. Boiler Code Case #1155, even when used in combination with a secondary indicator. A secondary indicator can be electrically connected to a primary unit and in no way affects the acceptability of the primary indicator's use.

Addition of a small self-contained differential transformer to the primary instrument permits it to operate the similarly equipped secondary instrument. This secondary indicator is actuated electronically and without any pressure connections. It may be installed at distances up to 5,000 feet from the primary unit and every movement of primary pointer is promptly matched in the secondary indicator.

The electronic secondary indicator is particularly useful for panel boards where fluids under pressure are undesirable. Also for remote locations





where intervening distance from primary instrument is too great for use of pressure tubing, or subject to freezing conditions unsuitable for liquid tubing.

Another logical application is where a secondary instrument is to be elevated far above liquid level, a location where the standard pressure-operated indicator could not be used.

### Low-Voltage Circuit Breaker

**K-17** I-T-E CIRCUIT BREAKER Co., Philadelphia, Pa., has developed a new low-voltage circuit breaker that provides short circuit current protection up to 100,000 rms amperes.

The new Cordon circuit breaker weds a current-limiting device to a standard molded-case circuit breaker, both in a common molded housing no wider or deeper and only a few inches longer, than the standard, comparable size breaker.

This makes possible a compact electrical protector with short circuit interrupting capacity of 100,000 rms amperes with all the operational advantages of a circuit breaker. The new breaker is a solution to the problem of ever-increasing high short circuit currents facing builders and users of low voltage (up to 480 volts a-c) electrical distribution systems.

The standard circuit breaker section contains thermal trip and instantaneous magnetic trip. Thus the repetitive action of the breaker is retained and replacement need be made only after major short circuit faults



## The new **ROPER** HYDRAULIC PUMP-MOTOR *for Improved* INDUSTRIAL SERVICE



1600 SERIES

Designed by the same engineers who developed the famous Roper Rotary Pumps, the new Roper Hydraulic Pump-Motors operate on the same principle using two equal size, smooth-running gears in a precision-fitted case. These units offer low-speed and high-torque (much needed in the hydraulic field), and their versatility finds them well-suited to heavy-duty service within their operating range. They run equally well in either direction both as pumps or motors . . . they can be direct-connected without speed reducers, thus conserving space . . . they are easily installed, easy to operate, and are long on economy. Perhaps you have equipment that can be further improved with a Roper Hydraulic Pump-Motor. Send for all the facts today.

### PERFORMANCE CHARACTERISTICS

Available in foot and flange mounted models. Recommended speed range on larger sizes is from 200 to 800 RPM with pressures to 800 PSI. In this range, Roper units require from 7 to 40 GPM flow and will develop up to 11.5 HP output at maximum speed and pressure. Smaller sizes may be operated up to 1200 RPM and up to 800 PSI which will require a flow of 16 GPM to develop up to 5 HP.

**SEND FOR BULLETIN 22**

GEO. D. ROPER CORPORATION • 440 Blackhawk Park Ave., Rockford, Ill.

**ROPER**  
*Rotary Pumps*



**REPLACEMENT TUBES**  
— *not in weeks—but hours*

*any size ... any boiler*

You can get the tubes you need . . .  
right now . . . if you order your  
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*and others*

*for any make  
of boiler*

## BOILER TUBE CO. OF AMERICA

McKEES ROCKS. (PITTSBURGH DISTRICT) Federal 1-7750

### Philadelphia

Raphael Paul 328 Lafayette Bldg. Lombard 3-7700

### Tampa

John D. Homan 14 South Orleans Ave. Tampa 8-3952

### Los Angeles

Fred S. Renauld & Co. 1014 W. Eighty-Fourth St. Pleasant 2-6181

### new equipment (continued)

For more data circle item code number  
on the postage free post card — p. 17

which exceed the normal interrupting rating of the standard breaker.

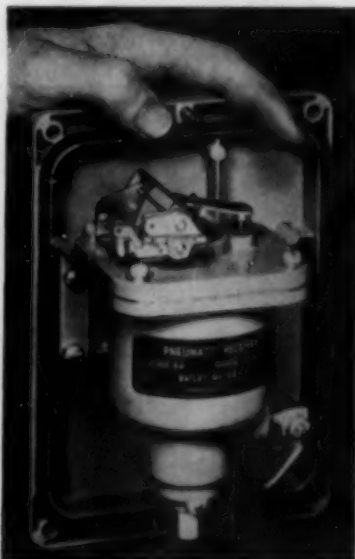
The unusually compact fuse element that makes this new breaker feasible is a specially designed current-limiting device called Amp-trap, manufactured by Chase-Shawmut Co., Newburyport, Mass., an I-T-E subsidiary. The fusible elements are silver links suspended between two copper blocks and packed in a special quartz sand. The silver and quartz—both having the same melting point—fuse simultaneously under currents of short-circuit magnitude. The fused glass provides a continuous dielectric across the fuse breaks to minimize arcing even under unusually high currents. Short-circuit current is completely interrupted in a quarter cycle.

### Plug-in Pneumatic Receiver

K-18

BAILEY METER COMPANY, 1050 Ivanhoe Road, Cleveland 10, Ohio, has announced a new pneumatic receiver said to provide unlimited record grouping, shelf-to-operation simplicity, and drift-free stability for instrument and control systems in power and process plants.

Transmitted pneumatic signals of a measured variable are received by this unit which drives a recording pen. Arbitrary mounting of one to



four identical units in any Bailey Receiver Recorder is made possible by plug-in, pin-positioned construction and a unique, indexed drive arm. Signals may be graphically recorded in any combination from any make pneumatic transmitter with 3-15 psig or 3-27 psig ranges.

A new receiver may be placed in service within an hour's notice, made possible by precalibration and unitized design. A complete receiver can be substituted within a matter of minutes since they are identical. This eliminates multiple parts storage and part replacement down time.

Receiver is factory calibrated to less than  $\pm 1\frac{1}{2}\%$  of range span and sensitive to signal changes of .01 psi. Ambient temperature changes between 30F and 130F are automatically compensated by an isoelectric spring. Hysteresis error is negligible.

#### Non-Plugging Materials Handling Valves

**K-19** THE ALLEN - SHERMAN-HOFF Co., Wynnewood, Pa., announces the availability of its new line of Type C materials handling valves, designed for efficient flow control in the pneumatic transport of fine solid materials. These valves offer advantages of self-feeding, non-plugging operation with positive shut-off, maximum carrying capacity, minimum frictional wear, and ease of maintenance in the handling of such materials as fly ash and other industrial dusts. Intended for installation in vacuum transport piping systems, the valves are available with either air-electric, remote or manual controls.



The self-feeding feature of these valves eliminates plugging. Atmospheric air, admitted into the vacuum system through the inlet ports, continuously picks up and sweeps material through the valve and into the transport piping at rates automatically matched to the increases and decreases of the load in the system.

THE *Pitch* IS IMPORTANT IN A

## WARREN-QUIMBY SCREW PUMP



The capacity of this pump is determined by the "pitch" of the screws and the full load speed of the motor. Expert engineering knowledge of just the right pitch, number of threads, experience data, and precision workmanship are all mighty important in this highly specialized type of pump. It is available in two general types:

Gear-in-head, with internal gears and bearings, for handling lubricating liquids free of corrosive elements and solids.

Double External Bearing and Gear, with separately lubricated gears and bearings, for handling all other liquids.

Standard pumps include jacketed, unjacketed, horizontal, vertical pedestal, vertical bulkhead, long body and hopper types in all machinable metals. Capacities, up to 3000 g.p.m. and pressures up to 700 p.s.i. on low viscosity liquids, and practically unlimited for high viscosity liquids which will flow into the pump inlet.

For specialized services involving hard-to-handle materials, insist upon Warren-Quimby, the original Screw Pump . . . now owned, greatly improved, manufactured, serviced and guaranteed by Warren . . . one of the pioneers of the Pump Industry.



Centrifugal • Reciprocating • Rotary



# WARREN PUMPS

WARREN STEAM PUMP COMPANY, INC.

Warren, Massachusetts

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TRADE MARK

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FROM QUALITY STEEL**

DIXISTEEL merchant bars are quality-controlled from start to finish. At each step of production — from molten steel to the finished hot-rolled product — checks and rechecks are made to assure proper physical properties, finish and tolerances.

DIXISTEEL Bars and Shapes are produced in a wide variety of shapes, sizes and grades — plain or galvanized.

*Write today for complete information and prices.*

**Atlantic Steel Company**

ATLANTA, GEORGIA

Producers of fine-quality low-carbon steel products, including: hot-rolled bars, shapes and strip • drawn wire • nails, rivets, staples • fence and barbed wire • fabricated reinforcing bars • forgings and stampings

### new equipment (continued)

For more data circle item code number on the postage free post card — p. 17

#### Cement Bond

**K-20** THE TROPICAL PAINT CO. Cleveland 2, Ohio, offers "Tropical Cement Bond"

as an aid in repairing cracked concrete floors, steps, driveways, etc.

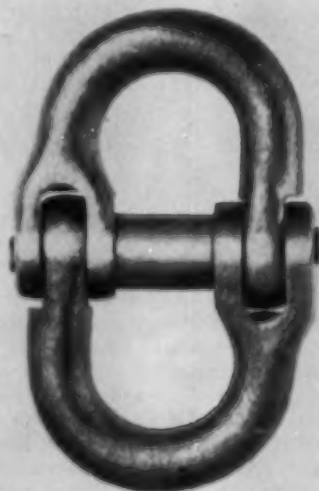
The new product, a liquid, is brushed on the old concrete surface to bond a new patch to it. It is claimed the patch will stay put indefinitely, withstanding heavy traffic conditions equally as well as the surrounding concrete.

The hole is chiseled out to a depth of half an inch, cleaned, dampened and the bond brushed on. After a half-hour wait—the new mix is troweled in and the job is complete.

#### Coupling For Chain Slings

**K-21** COLUMBUS MCKINNON CHAIN CORPORATION, Tonawanda, N. Y., is

marketing a new coupling link that enables alloy chain users to make up their own sling and special assemblies. Called "Hammerlok," the link eliminates the time now required for ordering and shipping new or repaired assemblies direct from the factory. The link consists of a pair of body halves, a tubular stud and a hardened alloy steel pin. It can be assembled quickly by anyone who can drive a nail. Once assembled, it is





securely locked by the steel pin which bites into the steel stud. No peening or welding is required.

The links are forged from alloy steel and heat treated. They are constructed to withstand the severe usage to which alloy chain is so often subjected and are stronger than alloy chain for which they are recommended. The manufacturer calls attention to the fact that these links are for use in joining attachments such as hooks and large links to body chain

### Bottom-Seating Sluice Gate

K-22

THE RODNEY HUNT MACHINE Co., Orange, Mass., has developed a flush bottom closure sluice gate, which allows more flow, yet insures closure against flow in either direction.

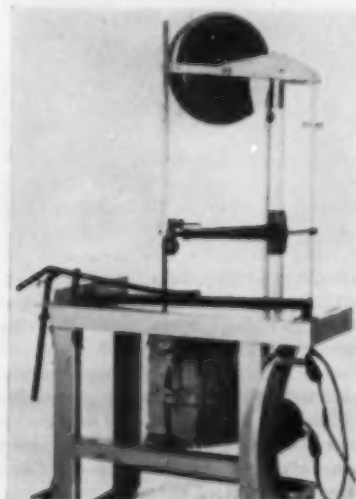
The frame of the new gate has been lowered so that the opening is flush with adjacent chamber floors or with the natural bottom floorline. It eliminates need for a barrier for the gates to seat against, and the deep pocket in which wedges must descend.

The new HY-Q gate is of cast iron bronze-mounted construction. It is secured in its closed position by heavy bronze wedges on top and sides which hold it tight against the frame. It carries on the bottom of the gate disc a heavy strip of flexible Neoprene.

### Versatile Metal Cutting Saw

K-23

GIBBS MACHINERY COMPANY, Columbia, S. C., is marketing a metal cutting saw that operates as a band saw or a cut-off saw. Known as the Gibbs-



# Combine them any way you choose for your boiler blow-off



Quick-opening

Slow-opening Angle Type

Slow-opening Y Type



Straightway and Angle Duplex Units



Straightway and Y Duplex Units



Angle and Y Duplex Units



Straightway Duplex Units

More than a dozen different arrangements of valve designs and operating methods are available to you in the complete Everlasting line of boiler blow-off valves for operating pressures up to 600 psi. Here is a range of selection from which you can get exactly the combination you wish.

For half a century, Everlasting Valve designs have been proving their effectiveness, reliability and durability—the kind of service you need for boiler blow-off. Each design fully meets ASME Code requirements. **WRITE FOR BULLETIN**

For "everlasting" service, use

**EVERLASTING**  
Valves

EVERLASTING VALVE CO.  
53 FISK STREET, JERSEY CITY 5, N. J.



## Equipment . . Supplies . . Methods (Continued)

Kennedy, the saw splits, notches, slots, saws contours and performs cut-off operations. Table mounted, it is easily detached for portable cut-off use.

Saw is designed for use in machine shops, welding and maintenance shops, steel fabricators and other metalworking industries.

Unit costs less than most single

operation band saws; handles in addition to standard work, several operations heretofore performed only, if at all, by specialized machines and attachments. Versatility results partially from the new design of the saw column which pivots about the cutting edge of the blade, for a 14 in. cut-off clearance or a splitting clearance with 15½ in. throat.

### IN NEW YORK CITY

U. S. Rubber Company  
Building Addition,  
Rockefeller Center  
George A. Fuller Company  
General Contractor  
Harrison & Abramovitz  
Architects

STEEL  
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THE **INGALLS**

Fabricating Steel is our Business

**IRON WORKS COMPANY**

BIRMINGHAM, ALA. • PITTSBURGH, PA.

SALES OFFICES: Birmingham, New York, Chicago, Pittsburgh, Houston, New Orleans, Atlanta

Blade feeds into work at 90 deg. to plane of table and direction of cut throughout the feeding traverse, allowing stock removal and reentrant cuts for notching and slotting.

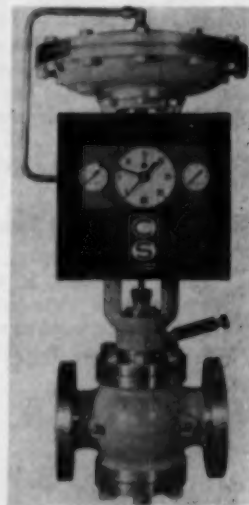
Vise locks over work instantly with hand pressure. Blades are changed in three minutes, with work in position on table. Automatic pressure-sensitive clutch eliminates jamming and machine damage. Operator selects automatic operation or foot-pedal control, power or hand feed.

Complete unit is portable and need not be bolted to floor. Weighs only 365 lb complete with table. It is powered by ½ or ¾ hp—115 volt motor. Optional attachments include rollers, on which operator rotates contour cuts; portable vise for saw when used without table; gravity fed coolant system.

### Pressure and Temperature Pilot Control

K-24

A. W. CASH Co., P. O. Box 551, Decatur, Ill., has introduced a new pilot which is said to provide extremely accurate and dependable control of

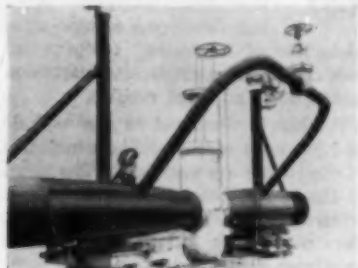


pressure and temperature. The Type 51 pilot is applicable for pressure ranges from 15 lb to 10,000 lb psi, and 30 inch vacuum. The pressure-sensing elements are available in phosphor bronze, beryllium copper or stainless steel. Temperature ranges are from -40 F to 1000 F, with mercury-actuated armored capillary temperature-sensing element available with plain bulb, union connection or union connection with separable socket. The pilot may be purchased separately or mounted on a Cash Standard control valve.

### Multiple Outlet Headers

**K-25**

LADISH COMPANY, Cudahy, Wis., has developed a new special - purpose fitting which simplifies installation and effects appreciable savings in welding time required to complete by-pass, blow-down and branch connections in pipe gate settings.



This fitting development consists of a header with multiple seamless outlets in exact specified positions, plus a factory-fabricated conical reducer. The new fittings eliminate costly and undesirable practice of nozzling in branch connections and saddle reinforcements.

In addition to being used for valve fittings on the main line, these headers are also being used as suction and discharge manifolds on compressors.

### Removable Seat Ring Gate Valve

**K-26**

THE FAIRBANKS COMPANY, 393 Lafayette St., New York 3, N. Y., is offering a renewable seat ring gate valve that assures replacement of the seat ring in seven to ten minutes with a screw driver, and with the valve body still installed in the line.



Heretofore, when it has been necessary to replace seat rings, the valves had first to be removed from the line. Now, with the new valves, it is only necessary to disassemble the bonnet, then unscrew and lift out the seat rings from the body. The seat rings are slipped into place and are easily secured again with the set screws.



*How to have clear telephone service...  
even in the middle  
of the proverbial  
"BOILER FACTORY"!*



**GAI-PHONE**... the wonderful  
(announced by V-phone)  
new electronic telephone for noisy areas

**E**VER TRY to talk to your chief engineer while he checked meters at a generator? Or to your production manager while your biggest and noisiest machinery ran full-blast? Such a situation *could* be no problem at all, if your man were talking to you on a GAI-PHONE.

This ingenious electronic telephone—using some vacuum tubes, rectifiers and other devices in its special base—actually creates a *Zone of Quiet* around the user's head. His voice comes through clear as a bell, but the extraneous noise is effectively suppressed. What's more, he can adjust his telephone so that your conversation is clearer and the annoyance of side-tone is reduced.

Best of all—it's all much less expensive than building sound-proof booths or such. Let us tell you more—send coupon today.

### STROMBERG-CARLSON® COMPANY

ROCHESTER 3, N. Y. • A DIVISION OF GENERAL DYNAMICS CORPORATION

Please let us have more information on your GAI-PHONES, for use in noisy areas.

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ADDRESS .....

SIGNED .....

# WEST COAST VETERANS' HOSPITAL

## USES 4 WING

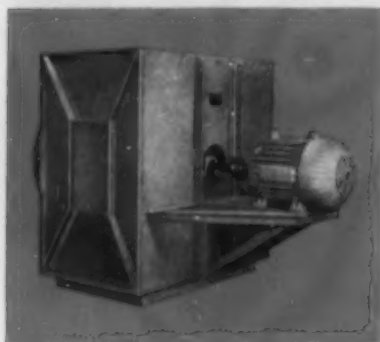
### PACKAGED POWER PLANT

## • DRAFT • INDUCERS



The above photo shows a recent installation of a motor-driven WING DRAFT INDUCER in a large Veterans' Hospital, serving a new 60,000 lb/hr boiler. Three previous installations of Wing Draft Inducers, each serving a boiler of similar size, are turbine-driven. Complete satisfaction with the 3 original units made selection of a Wing Inducer inevitable. Some of the reasons for this satisfaction are:

- Big Savings in Space
- No Water Cooling of Bearings
- No Lubrication Needed
- Interchangeable Inlets—top, bottom or sides
- Easy to Inspect and Maintain



**WING POWER PLANT DRAFT INDUCER**  
Turbine or Motor-Drive available.  
Fan and bearing assembly may  
be withdrawn from housing for  
inspection and servicing.

**L. J. Wing Mfg. Co.** 169 Vreeland Mills Road, Linden, N.J.

Factories: Linden, N.J. & Montreal, Can.

# Wing

L. J. Wing Mfg. Co., Linden, N. J. SP-10  
Please send me Bulletin I-55—Draft Inducers

Name .....  
Firm .....  
Address .....  
City ..... Zone ..... State .....



## new equipment (continued)

For more data circle item code number  
on the postage free post card—p. 17

### Rubberized Asphalt

**BERRY ASPHALT COMPANY,**  
**K-27** Box 800, Magnolia, Ark.,  
has developed a new complete line of rubberized asphalts for roof coatings, waterproofing, corrosion prevention and joint sealing.

Rubber is dissolved in the asphalt and yet none of the resilient qualities of the rubber are sacrificed. The blend of the two substances remains pliable when cold and holds firm when hot, does not become brittle and cracked in winter or runny and sticky in summer.

Rubberized asphalt does not oxidize, permitting it to be left exposed to the weather without the necessity of gravel protective covering.

When used in repairing pavement or roofs, it flows smoothly into cracks and levels itself. Old surface materials are actually penetrated and enlivened by the rubberized compound.

### New Plug Valve — 700 F

**NATIONAL AIRCOIL BURNER**  
**K-28** COMPANY, 1254 E. Sedgley Ave., Philadelphia 34, Pa., has developed an entirely new plug valve especially designed for industries where liquid fuel is burned at temperatures up to 700 F.

No castings are used for the pressure parts of these valves. All parts are machined from solid ingots. Body is steel and the trim is stainless steel. The valves are available in sizes of 1/2", 3/4", and 1".





### 50 hp Boiler Burns #4 Oil to Save 30% on Fuel Costs

**K-29** CYCLOTHERM DIV., NATIONAL-U.S. RADIATOR CORP., Oswego 5, New York, has developed a compact 50 hp steam generator designed to burn #4 oil. The new unit makes it possible for manufacturers with limited space facilities to cut fuel costs as much as 30%, due to the price differential between #4 residual oil and light oils. The tiny boiler operates at efficiencies of 80% or better.

Despite the fact that the newly designed unit utilizes #4 oil, it requires less than one-half the space of standard 50 hp units. The mite-sized Cyclotherm can be installed in 20 sq ft of floor area. It requires only 4'8 1/2" of head room. Since no cement foundation is necessary to install this package boiler, it can be installed anywhere that fuel, water and electricity are available.

Cyclotherm engineers expect that multiple installations of this small boiler will prove profitable in Metropolitan areas and in plants that experience wide variations in steam load. Because of its small size, the boiler is particularly adaptable for plants where space is limited, or to replace older, larger boilers of lower capacity without expensive structural changes in physical plant.

### Self-Vulcanizing Rubber Repair Material

**K-30** FLEXIBLE STEEL LACING COMPANY, 4607 Lexington St., Chicago 44, Ill., has developed a repair material which makes it possible to quickly repair bruises, tears and edge damage on conveyor belts without the use of heat or heavy vulcanizing equipment. Since no curing time is required, belts may be returned to service as soon as repair work is completed. This greatly reduces the loss of production time.

The new self-vulcanizing rubber repair material is called "REMA." This vulcanization is a chemical process. The repaired area is sealed with an abrasive resistant cover stock patch.

"REMA" seals out moisture, reduces mildew, rot and deterioration, the great enemies of conveyor belts. Any maintenance man can readily apply the materials, no particular skill is required. It can also be used to cover metal belt fasteners used to join conveyor belts.

This new product is available in introductory kits or parts separately.



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that meets your  
individual need**

Phone your Bunting Distributor before you start an endless search or commence costly machining of an unusual bearing. It is often easy to alter a Bunting Standard Stock Bearing to fit extraordinary applications. Also services of expert Service Machine Shops maintained in Bunting Branches are instantly available through your Bunting Distributor.

**Bearing Headquarters**

Your Bunting Distributor carries in stock for your money saving convenience completely machined and finished Bunting Standard Stock Industrial Bearings, Electric Motor Bearings and Precision Bronze Bars in a complete range of sizes, meeting all your usual production and maintenance needs. You will find him listed in the classified section of your telephone book—most likely under the heading Bars, Bronze or Bearings, Bronze. Your Bunting Distributor is an industrial distributor or a specialist in certain industrial items. He has been especially selected for his responsibility and his understanding of bearing requirements. Ask him for the Bunting Catalog or write.

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BRONZE BEARINGS • BUSHINGS • PRECISION BRONZE BARS

THE BUNTING BRASS AND BRONZE COMPANY, TOLEDO 1, OHIO  
BRANCHES IN PRINCIPAL CITIES

### Fluor's Metal Prod. Dept. Moves to Paola, Kansas

All Metal Products Department offices and engineering personnel of THE FLUOR CORPORATION, LTD., have been transferred from Los Angeles to the company's recently expanded manufacturing plant in PAOLA, KANSAS. The move is in line with Fluor's

program to consolidate their pipe prefabrication and metal products fabrication activities in Paola.

Fluor's original pipe prefabrication facilities were set up in 1940 to expedite the supplying of refinery and gasoline plant piping to the company's construction projects throughout the Mid-Continent. Since that time, due primarily to the strategic

location of Paola in the near-geographic center of the nation, those activities have since been expanded to include the manufacture of pulsation dampeners and heavy duty mufflers plus the prefabrication of high pressure piping and the fabrication of pressure vessels and miscellaneous structural steel.

Fluor is currently building vessels up to 120 ft long by 10 ft in diameter and weighing up to 65 tons. They have recently added new equipment, including a pinch-type roll, capable of hot-rolling carbon steel plate up to 3 in. thick. There are only three other shops in the mid-west capable of performing such work.

Fluor has also developed a new production process which enables them to cold-extrude branch openings out of header pipe manifolds and vessels. This process meets all code requirements, simplifies piping configuration, and results in a high quality finished product. It involves the application of extremely high pressure, up to 500 tons and permits the working of the cold metal, thus eliminating hot forging. Fluor serves the south and southwest through District Offices in Houston, Texas; Tulsa, Oklahoma; and a representative, Jos. W. Eshelman & Co., Inc., of Birmingham, Alabama.



Large structure is an Armco Series P Building. At right is an Armco Series S Building.

## BUILDINGS? HOW BIG?

Chances are, your requirements can be met with Armco Steel Buildings. There are two different styles—Series S and Series P—offering clear-span widths from 4 to 100 feet. Multiple-Span Structures will supply practically any widths. Lengths are almost unlimited.

**SERIES S BUILDINGS** have unique STEELOX construction that simplifies erection even for small crews without previous erection experience. Widths range up to 40 feet.

**SERIES P BUILDINGS** have a steel framework covered by corrugated metal sheets. Widths range from 30 to 100 feet.

Both structures are of durable, all-metal construction. They have been used for a quarter of a century in various industrial and commercial applications. With either type, the structure may be extended or dismantled and re-erected without loss of material. Send coupon for details.

### ERECTION SERVICE AVAILABLE

#### ARMCO DRAINAGE & METAL PRODUCTS, INC.

DIXIE DIVISION  
619 Forsyth Bldg. • Atlanta, Georgia  
SOUTHWESTERN DIVISION  
C & I Life Bldg. • Houston, Texas  
Other Offices in Principal Cities

Armco  
Steel  
Buildings



Send me data on Armco Steel Buildings:  
I'm interested in a building \_\_\_\_\_ feet wide by  
\_\_\_\_\_ feet long.

NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

### H. K. Porter Purchases Vulcan Crucible Steel

THE VULCAN CRUCIBLE STEEL CO., Aliquippa, Pennsylvania, tool steel manufacturers, has been purchased by H. K. PORTER COMPANY, INC., Pittsburgh.

Vulcan Crucible, founded in 1901, has annual sales of close to four million dollars. James O. Flower, the concern's president, will be Vice-President and General Manager of the new Porter division. Vulcan's branch offices are located in Chicago, Detroit, and Boston, while sales representatives of the concern are in New York, Baltimore, Lansing (Mich.), Milwaukee, and St. Louis. Mr. Evans announced that the sales organization for Vulcan in the fast growing South will be that of Porter's CONNORS STEEL DIVISION, BIRMINGHAM, and that warehouse stocks of Vulcan products will be established in Birmingham to serve the nearby eight-state area.

### Textron American to Build New Plant in Barnwell, S. C.

TEXTRON AMERICAN, INC. recently announced plans for a new 400,000 sq ft mill at Barnwell, S. C. The announcement was made by Mr. R. L. Huffines, Jr., President of Amerotron Corporation, the textile division of Textron American.

"Amerotron plans to make this the most outstanding woolen unit in the world. We plan to manufacture staple and semi-novelty fabrics on a basis that will recapture the pre-eminent position previously occupied by American Woolen Company in these fields," said Mr. Huffines.

The plant will be completely integrated with spinning, weaving, dyeing, and finishing all housed under one roof. The contract for the general construction has been awarded to the Daniel Construction Company of Greenville, S. C. Lockwood Greene Engineers, Inc., will design the plant and Barnes Textile Associates, Inc. are the technical advisors.

### Kaiser Aluminum—West Va.

Kaiser Engineers has awarded to Westinghouse Electric Corporation contracts valued at more than \$1,000,000 for equipment in the KAISER ALUMINUM and CHEMICAL CORPORATION's new sheet and foil rolling mill near RAVENSWOOD, W. VA.

Westinghouse will supply all the electrical equipment in connection with the installation of the aluminum sheet mill and foil mills, as well as annealing furnaces and the outdoor electrical substation, including switchgear and rectifiers.

The equipment is scheduled for completion in the fall of 1955.

### Big Industrial Development for Fort Worth, Texas

Plans for the development of an 83-acre \$8,000,000 to \$10,000,000 industrial park site—the largest industrial development ever proposed in the Fort Worth area and the only one of its type in the southwest—were recently announced by E. L. Baker, who will develop the district, and the Industrial Department of the Fort Worth Chamber of Commerce.

The development, to be known as RICHLAND INDUSTRIAL PARK, will be located in the village of Richland Park, eight miles northeast of downtown Fort Worth. Grading has already begun over the entire site and



## PORTFOLIO OF BIRD-ARCHER ENGINEERING SERVICES FOR WATER TREATMENT

For experienced counsel and personal attention to water or steam problems at your plant, it will pay you to call on Bird-Archer's qualified engineers. Highest quality chemicals and over sixty years experience assure maximum results with Bird-Archer's Complete Water Treatment Service.

#### PLANT SURVEY

Studies of your use of water or steam equipment and past performance.

#### WATER AVAILABILITY STUDY

Analysis of water supplies starting at source.

#### LABORATORY SERVICE

Experienced chemists specialize in scientific water analyses and research.

#### DEVELOPMENT OF TREATMENT AND CONTROL SYSTEMS

Operational changes where necessary.

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Bird-Archer custom formulates chemical treatments for your specific problems.

#### EQUIPMENT RECOMMENDATIONS

Specification and furnishing of additional equipment when necessary, including complete analysis of savings and benefits made possible.

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Experienced technicians instruct your personnel in accurate control and test procedures.

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Personal call-backs to your plant by a Bird-Archer Service Engineer to assure best possible results.

ENGINEERING PLUS CHEMISTRY  
EQUAL BIRD-ARCHER SERVICE

For Power

For Process

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## BIRD-ARCHER WATER TREATMENT

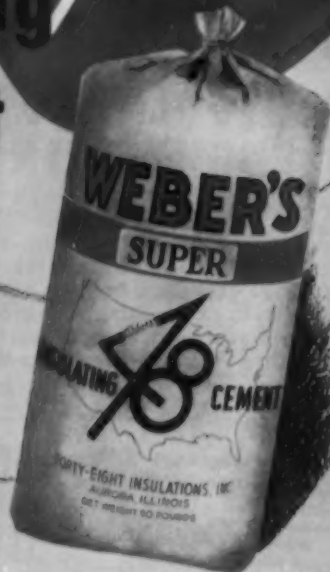
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# Weber's Super Insulating Cement



## APPLIES.

- easier—super adhesion!
- faster—super fine mix!
- further—super coverage!

## FINISHES.

- much smoother—much whiter.

## INSULATES.

- better—lower K factor; higher heat resistance.
- longer—physically stable; chemically neutral.
- at higher temperatures—up to 2100° F.



**FORTY-EIGHT INSULATIONS, INC.**  
AURORA, ILLINOIS

Send me full details on Weber's Super "48" Insulating Cement—and a sample to try.

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COMPANY \_\_\_\_\_  
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CITY \_\_\_\_\_ ZONE \_\_\_\_\_ STATE \_\_\_\_\_

## News (continued)

construction of the first building—a 101,000 sq ft structure that will cost \$400,000—began in June.

Richland Industrial Park will offer to industry a combination of out-of-city comforts and attractiveness and in-city conveniences for employees and industrial operations. It will be built with the premise that an industrial area can be attractive and an asset to the appearance of a community.

It will cover 83 acres of a triangular-shaped site bounded by Midway Road on the south, the Handley-Ederly Road on the east and the Rock Island Lines tracks on the north. Midway Road is the closest and most direct thoroughfare into the Fort Worth city limits.

The plan of development for Richland Industrial Park calls for division of the area into 100 desirable industrial sites. More than one site, however, will be available to an individual industry if desired.

The area will be developed on a lease basis, in line with present industry preferences, so that no capital investment will be required by the industrial users. The sites and the buildings to be erected upon them will be available under long-term leases with options to buy. The developers will build on each site to specifications of the lessee.

Service tracks, connecting with Rock Island lead tracks, will be available to serve each industry individually and the lead and service tracks will be so located that each site will be served from the rear, keeping the front open to maintain the parklike appearance.

Consulting engineer and architect on the entire project is Garmon Construction Company of Fort Worth.

## F. J. Evans Eng. Appoints Southwestern Representative

To increase sales and service coverage on industrial and commercial air conditioning equipment in the south, F. J. EVANS ENGINEERING COMPANY, sales agents for Surface Combustion Corporation, have added a new representative, WM. N. FITZCHARLES, with headquarters in HOUSTON, TEXAS.

Mr. Fitzcharles is experienced in all phases of air conditioning equipment. He was associated with Surface Combustion Corporation in design and de-



# CYCLOTHERM

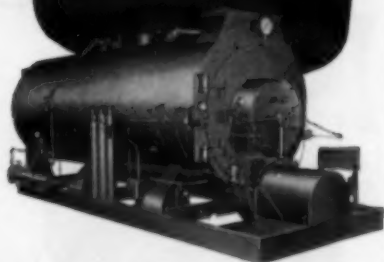
## Cyclonic Combustion

### GUARANTEES

# 80%

### EFFICIENCY

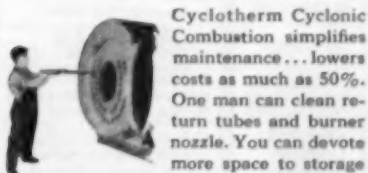
IN OIL AND/OR GAS



**Cyclotherm Steam and Hot Water Generators**  
18 to 500 hp.  
15 to 200 psi.

Cyclotherm Cyclonic Combustion achieves its high heat transfer rate in only 2 passes. Gives you 66% more steam generating power per sq. ft. Fuel consumption varies with load requirements.

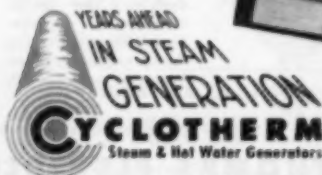
From cold start to full power takes only 15 to 20 minutes. Fuel changeover can be quickly made as fuel prices fluctuate.



Cyclotherm Cyclonic Combustion simplifies maintenance... lowers costs as much as 50%. One man can clean return tubes and burner nozzle. You can devote more space to storage and production. Cyclotherm is up to 1/2 smaller than other packaged units. Time-saving, economical installation requires 5 connections.

therm is up to 1/2 smaller than other packaged units. Time-saving, economical installation requires 5 connections.

Write today for the free booklet which proves how Cyclotherm can produce steam at lower costs... in minimum space.



Cyclotherm Division  
National-U. S. Radiator Corp.,  
2223 E. First Street,  
Oswego, New York

velopment, sales and estimating, installation and service work for several years. His specialties are those applications requiring humidity control, low temperature drying, processing and comfort air conditioning. Mr. Fitzcharles will concentrate his activities in Texas and Louisiana.

### Allen-Sherman-Hoff Names Virginia Sales Representative

THE ALLEN-SHERMAN-HOFF Co., Wynnewood, Pa. manufacturer of hydraulic and pneumatic handling systems, announces the appointment of WILLIAMSON & WILMER, INC. as exclusive sales representative for the company's line of ash handling equipment in the state of VIRGINIA.

Williamson & Wilmer, one of the oldest manufacturer's representatives in the state, will handle the A-S-H line in addition to other related lines of power plant equipment. Members of the firm include FRED P. WILMER, T. SPENCER WILLIAMSON, JR., MORRIS S. SMITH and JAMES L. THOMAS.

Williamson & Wilmer, Inc. is located at 617 Mutual Building, Richmond 19, Virginia.

### Louisville Plant Managers for Reynolds Metals Co.

REYNOLDS METALS COMPANY has announced the appointment of two new Louisville plant managers, R. M. CHAMBERLIN and FRANK BALLARD, for the aluminum firm's Plant 10 at 821 South 12th Street and Plant 9 at 2827 Hale. ALAN SPARKS, who has been manager of both operations, has been elevated to manager of all foil and printing operations in the Louisville area.

Chamberlin is the new manager of Plant 10, which produces rotogravure-printed aluminum foil wraps and labels. This facility was the "birthplace" of Reynolds Wrap, the household foil which made the company name commonplace in the American home.

Ballard is the new Plant 9 manager. He joined Reynolds in 1936, and has been serving as assistant divisional manager in Richmond.

## KEEP UP-TO-DATE

See Pages 16-19

# "THIS LUBRICANT CUT BEARING REPLACEMENTS OVER 40%"



says—HANOVER BUILDING  
SUPPLY CO. of Hanover, Pa.

"Before using LUBRIPLATE, we replaced the wheel bearings in over 50% of our trucks each year. Since using it, bearing replacements have dropped to less than 10%. We have also been able to increase periods between chassis lubrications from 500 to 2000 miles. We are very happy over our change to LUBRIPLATE, and heartily recommend it to fleet operators interested in saving money."

HANOVER BUILDING SUPPLY CO.  
C. O. Albright, Pres.

**REGARDLESS OF THE SIZE AND  
TYPE OF YOUR MACHINERY,  
LUBRIPLATE GREASE AND  
FLUID TYPE LUBRICANTS WILL  
IMPROVE ITS OPERATION AND  
REDUCE MAINTENANCE COSTS.**

LUBRIPLATE is available in grease and fluid densities for every purpose... LUBRIPLATE H. D. S. MOTOR OIL meets today's exacting requirements for gasoline and diesel engines.



For nearest LUBRIPLATE distributor see Classified Telephone Directory. Send for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. Write LUBRIPLATE DIVISION, Fiske Brothers Refining Co., Newark 5, N. J. or Toledo 5, Ohio.



*Bring the Sun Indoors!*



**Your Plant can now have  
EFFICIENT, HEALTHFUL HEAT  
silent and draft-free  
with  
PANELBLOC  
INFRA-RED UNIT HEATERS**

- Comfortably heats workers and machines within radiation area.
- Heat not wasted on air which would normally rise to ceiling.
- No fan, motor or electrical connection needed.
- Never shut down due to power failure.
- Heat delivery cannot be deflected by drafts from open doors or windows.
- No moving parts . . . less maintenance.
- May be used with any commercial type gas fuel.

Remember how comfortable it feels to stand in the warm sun on a cold day? That's how Panelblocs work. Gentle, comfortable heat rays warm everything they touch. You have all the advantages of conventional heaters . . . none of the disadvantages.

Panelbloc uses no fan. This means no drafts (heating is accomplished by guided radiation). With no electrical connections, Panelbloc costs less to install—will continue to operate during a power failure . . . and it heats, not air, but personnel and equipment . . . anything solid.

Panelbloc may be installed in practically any type structure for general heating; for spot heating in an otherwise unheated building; for heating a single room . . . In fact, almost any heating requirement can be solved with Panelbloc. Available in two models: 62,500 btu and 125,000 btu input.

For warm air heating check the Prati-Daniel THERMOBLOC Heater . . . used the world over.

**THERMOBLOC**  
Division of  
**PRAT-DANIEL  
CORPORATION**  
4-9 Meadow St. • South Norwalk, Conn.  
Send Me Panelbloc Bulletin P-154  
Name \_\_\_\_\_ Title \_\_\_\_\_  
Company \_\_\_\_\_  
Address \_\_\_\_\_

## News (continued)

### Texas and Florida Distrib. Allis-Chalmers Mfg. Co.

THE CONSOLIDATED ELECTRIC SUPPLY, INC., 504 Angela St., Key West, Florida, Fred Braverman, president, has been recently appointed distributor for Allis-Chalmers transformers.

THE JOE SUMMERS & COMPANY, INC., 401 West 11th Street, Mission, Texas, has also been named a distributor for Allis-Chalmers motors and control in the area around Mission, Texas.

### Texas Power and Light Co. Wins Charles Coffin Award

TEXAS POWER & LIGHT COMPANY of Dallas, Texas, was given the electric industry's highest honor, the Charles A. Coffin Award for 1954, in ceremonies conducted at the 23rd annual convention of the Edison Electric Institute in Los Angeles.

The award was presented to W. W. Lynch, TP&L president, by Philip D. Reed, chairman of the board, General Electric Company. The award is presented annually by G.E. through the Edison Electric Institute to the electric utility company judged as making the greatest contribution to the advance of the industry and service to customers. TP&L Company is the first company in the Southwest to win this award, which was established by the General Electric Company 33 years ago in honor of its first president.

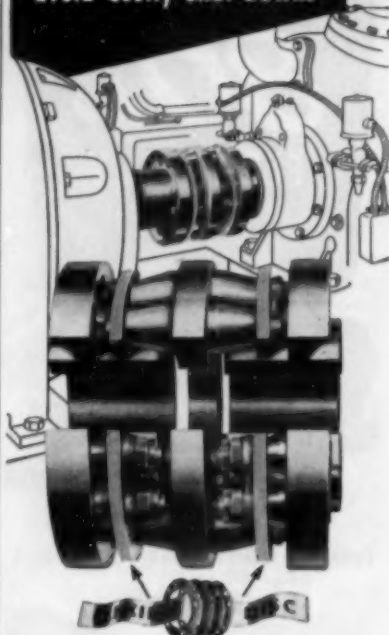
In selecting the winner this year, the judges cited Texas Power & Light Company "for extraordinary enterprise and resourcefulness in uncovering and developing the extent and value of untapped natural resources . . . and for its contribution to the industrial and agricultural development of Texas."

Important among the reasons Texas Power & Light Company won the award were its research program of preparing and using lignite in power plant boilers, pointing toward the development of a low-cost fuel for production of electric power, and the use of this natural resource for the further industrialization of the TP&L service area.

After some thirteen years of experience using lignite as a fuel for its Trinidad generating station prior to 1940, the Company, in 1948, began an extensive research program, working with the U. S. Bureau of Mines, to

## Specify THOMAS ALL METAL FLEXIBLE COUPLINGS

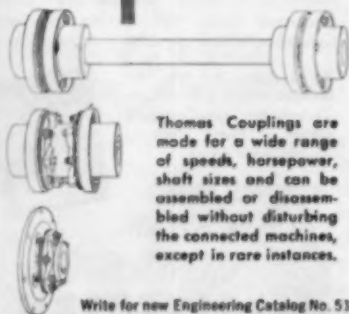
for Power Transmission to  
avoid Costly Shut-Downs



Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

### DISTINCTIVE ADVANTAGES

FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



Thomas Couplings are made for a wide range of speeds, horsepower, shaft sizes and can be assembled or disassembled without disturbing the connected machines, except in rare instances.

Write for new Engineering Catalog No. 51A

**THOMAS FLEXIBLE  
COUPLING CO.**  
WARREN, PENNSYLVANIA, U.S.A.

# Catawissa

## PERFECT SEAL Unions

HOT FORGED from solid, rectangular steel bars, designed and produced for dependable, long-life service under the severest piping conditions!

**A TYPE FOR EVERY USE!**  
FOR ALL PRESSURES!  
FOR ALL TEMPERATURES!



**Standard & Double  
Extra Heavy  
UNIONS**

Available with  
screwed or socket  
weld ends. 3000-  
lb. sizes  $\frac{1}{4}$ " to 3";  
6000-lb. sizes  $\frac{1}{8}$ "  
to 2".



**ORIFICE  
UNIONS**

With screwed or  
socket weld ends.  
3000-lb. and 6000-  
lb. service.

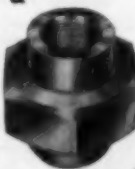
**MALE & FEMALE  
UNIONS**

With steel-to-steel,  
bronze-to-steel, stain-  
less steel-to-steel or  
orifice seats. 3000-lb.  
service only.



**FULL STAINLESS &  
FULL ALLOY  
STEEL UNIONS**

With screwed or  
socket weld ends.  
3000-lb. and 8000-lb.  
service.



**WRITE FOR CATALOG II**  
Showing the Complete Catawissa  
line of Perfect Seal Products

**CATAWISSA VALVE &  
FITTINGS COMPANY**  
950 MILL ST. • CATAWISSA, PA.

determine how Texas lignite could be used more effectively as a fuel.

The results obtained in this program were largely responsible for the location in Rockdale, Texas, of the Aluminum Company of America's new smelting plant.

### Sarco—Tenn. & Miss.

Mr. H. L. Simmons, president of SARCO COMPANY, INC., has announced the appointment of the following new Sarco Sales Representatives: J. B. LAMMONS COMPANY, 1596 Madison Avenue, MEMPHIS, TENNESSEE and MR. ROBERT PORTER, 224 N. Congress Street, JACKSON 2, MISS.

Sarco and Sarcotherm are leading manufacturers of steam traps, temperature regulators, heating specialties and Sarcotherm weather compensated control systems.

### Ehrlich is Atlanta Dist. Mgr. for Bellows Co.

THE BELLOW COMPANY, Akron, Ohio, manufacturers of "Controlled-Air-Power" work devices has announced the appointment of SIDNEY B. EHRLICH to the position of Atlanta District Manager. Mr. Ehrlich will be responsible for coordination of Bellows Field Engineers' activities in the greater Atlanta area, including all adjacent southern states. The Atlanta office is located at 267 E. Paces Ferry Rd., Atlanta 5, Georgia.

### Mid-South Representatives for Childers Manufacturing

The POWER EQUIPMENT COMPANY, 1352 Madison Ave., Fitchburg Building, MEMPHIS 4, TENNESSEE, has been appointed Engineering Representative in western Tennessee, northern Mississippi and eastern Arkansas, for Childers' Aluminum Weatherproof Jacketing. The product used for protection of insulated lines, vessels and towers is manufactured by the Childers Manufacturing Co. of Houston, Texas.

Bob Childers, president of the firm, said that the Power Equipment Co. will serve as engineering consultant and sales representative for the above area. He also announced that the J. P. MAQUIRE COMPANY, 3144 Paris Ave., NEW ORLEANS, LOUISIANA, had been appointed engineering consultant and sales representative in Louisiana and southern Mississippi.

# ILLCO-WAY

## ionXchange

## PURIFIES WATER BY REMOVING DISSOLVED SOLIDS

The most reliable method of purifying water containing dissolved solids such as calcium carbonate, magnesium sulphate, sodium chloride, silica, or many other common contaminants, is ILLCO-WAY ionXchange (also known as de-ionization). Many adaptations of the basic methods are available including the new mixed-bed de-ionizers which produce water described by one user as of "fantastic purity"

## PRACTICAL EQUIPMENT MADE BY "ILLCO-WAY"

Illinois Water Treatment Company has pioneered in the design and manufacture of practical equipment for ionXchange processes ever since the first year that the de-ionization idea came out of the laboratories. A wealth of experience has been accumulated so that "ILLCO-WAY" is today recognized as the leader in the development of commercially successful installations.

## ADAPTED FOR PURIFYING RADIOACTIVE WASTES

With the rapid expansion of the field of nuclear science, various needs have developed for ionXchange, particularly in the purification of wastes contaminated by radioactivity. ILLCO-WAY equipment has been designed and built for this and other purposes in several plants employing atomic energy. For further information on the uses of ILLCO-WAY ionXchange, write . . .

ILLINOIS WATER TREATMENT CO.

## ionXchange

ILLCO-WAY

840 CEDAR ST.  
ROCKFORD,  
ILLINOIS

NEW YORK OFFICE: 141 E. 44TH ST., NEW YORK 17, N. Y.  
CANADIAN DIST. PUMPS & SOFTENERS, LTD. LONDON, ONT.





## CONVERT for EXTRA POINTS

A firing system that's inadequate and expensive may be eating into your profits . . . unnecessarily! Convert to gas—and increase profits—by cutting labor costs, eliminating coal hauling, ash-removal, flue and tube cleaning. Gas requires less maintenance on equipment, increases efficiency and effects greater savings! Present system can usually be retained as a stand-by.

Consult McBurney Stoker and Equipment Company, makers or suppliers of the best boiler room equipment available, on all problems. If your firing system requires wood, coal, gas, oil or any combination thereof, McBurney Stoker and Equipment Company has designed units to fit your particular needs. They have served industry since 1911, and can offer you the finest equipment, including: Copes-Vulcan Boiler Controls, Copes Feedwater Regulators, Vulcan Soot Blowers, McBurney Underfeed Coal Stokers, Aqua Electric Scale Control, Gas and Oil Burning Equipment.

### McBURNey

STOKER AND EQUIPMENT COMPANY

SINCE 1911

2110 Peachtree Road, N.E.  
Atlanta, Georgia

Phone: Elgin 4436

## News (continued)

### Robinson General Manager of Carolina Power & Light

Directors of CAROLINA POWER & LIGHT COMPANY recently designated H. BURTON ROBINSON, for twelve years vice-president in charge of the operating and engineering department, as the company's general manager.

The title of general manager was shifted to Robinson from Louis V. Sutton, who will continue as president and chairman of the board. Sutton has been CP&L's president and general manager since 1933, when he succeeded the late Paul Tillery.

A native of Columbia, S. C., where his father was a distinguished attorney, Robinson studied engineering at Clemson College and at N. C. State College, where he won his B.S. degree in 1922. He studied two years at Massachusetts Institute of Technology before taking his first power job—with Brooklyn (N. Y.) Edison Co.

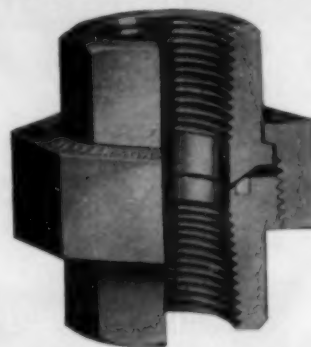
He has been associated with CP&L since 1925 except for a five-year period (1927 to 1932) with Electric Bond and Share. Working his way up through the ranks, he became vice-president in charge of operations and engineering in 1943. He has supervised the expenditure of more than \$200,000,000 for expanded power facilities in CP&L. He became a director of CP&L in 1953.

### Gas Meter Repair Center Atlanta, Georgia

ROCKWELL MANUFACTURING COMPANY, PITTSBURGH, PA., recently opened the largest gas meter repair center in the Southeast in ATLANTA, GA. The new air-conditioned building, which adjoins Rockwell's Meter and Valve Division Southeastern regional headquarters at 1495 Northside Drive, N.W., was designed and built by Ben Massell Companies of Atlanta.

The new center will ultimately employ up to 60 persons according to J. W. Northcutt, regional sales manager. All except several supervisory employees will be hired locally, and training is already under way. The center represents a major step in the company's continuing program of expansion of services in the South—a program which led to the erection of the present headquarters building and warehouse in 1952.

## YOU GET "More for the Money"



...in  
*jefferson*  
**UNIONS**

...for example:

"MORE" . . . in service life through the use of air furnace malleable iron of 55,000 psi tensile strength.

"MORE" . . . in assured performance, through inspection and air-testing under liquid before shipment.

"MORE" . . . in security and tightness, through a ball joint of true spherical contour.

"MORE" . . . in dependability, through an exclusive recessed brass seat located in a fully protected position away from pipe ends.

"MORE" . . . in care-free service, through seat rings cut from special brass tubing and securely pre-stitted into machined channels.

... and with JEFFERSON

... a "MORE" complete line . . . including Unions, Union Elbows and Union Tees in Jefferson 300#, Excel 250# and Master 150#; also Flanges in Jefferson 300# and Unions in Enduro 300#. All lines also available with all-iron seats. Underwriters approved.

Your nearest distributor can supply you . . . or contact us direct.

### JEFFERSON UNION CO.

45 Fletcher Ave.  
Lexington 73, Mass.



## Jerguson TRUSCALE Remote Reading Gages



"Available  
with  
Explosion-  
proof  
Illuminators"

### Full 180° Visibility Accuracy to 1/2 of 1%

You get full 180° visibility with the new Jerguson Truscale Gages with the Convex Scale. Scale markings are directly on the convex face and the indicator goes clear around the convex surface. You can bring your liquid level down to the control room floor, or other remote point . . . and can see it from anywhere in the room . . . can check a whole line-up of Truscales with one look from any point.

Truscale is really accurate too . . . sensitive to 1/2 of 1% of scale reading. Simple trouble-free construction. Available with signal horns, lights and up to six repeaters for other auxiliary points.

### New design boiler water gage gives maximum visibility



Jerguson's unique offset single piece gage chamber gives you more inches of visibility with no blind spots. Special valve with horizontal loop keeps the strain off the gage under varying conditions of expansion and contraction.

Send for complete data on Jerguson Convex Scale Truscales . . . and Boiler Water Gages.

## JERGUSON

Gages and Valves for the  
Observation of Liquids and Levels

**JERGUSON GAGE & VALVE COMPANY**  
100 Fellsway, Somerville 45, Mass.

Offices in Major Cities  
Boiley Motors & Controls, Ltd., London, Eng.  
Contrôle Boiley, Paris, France

## Wheeling Steel—West Va.

ALEXANDER SHEARER of Wheeling, West Virginia, has been appointed assistant to the operating vice-president of WHEELING STEEL CORPORATION, WHEELING, WEST VA.



Alexander Shearer

Shearer has been associated with Wheeling Steel since 1922, spending the first three years at the Beech Bottom, West Virginia plant in the inspection department, then as mill tracer, later being made weighmaster.

In 1925, he was transferred to the general offices in Wheeling as assistant scheduler. Two years later, he was promoted to scheduler of the Wheeling district mills.

In 1942, he was appointed controller of secondary products, and in 1945, was promoted to the position of Assistant to Manager of Production. In August 1952, the Wheeling Steel operating official was made Manager of Production, which position he retained until his present promotion.

## Automatic Transportation Alabama Representative

Appointment of DESHAZO AND THOMAS, BIRMINGHAM, ALA., as its franchised representative has been announced by the Automatic Transportation Company of Chicago.

The arrangement is effective immediately, with LEE DESHAZO and EDWARD F. THOMAS handling sales and service.

The firm is a recently formed partnership. Both have had several years experience selling materials handling equipment in the Alabama area. DeShazo is a graduate of Auburn, and Thomas a graduate from Alabama.

The firm has sales and service facilities at 107 Broadway, Birmingham, where it will carry a stock of parts.



## IMMEDIATE DELIVERY

from the World's Largest Stock

## CHROMALOX Electric Heaters

Chromalox offers you prompt service from the world's largest factory stock of industrial electric heaters . . . over 15,000 types, sizes and ratings. Local stocks at points throughout the nation.

There is a specific Chromalox Electric Heater to heat liquids, air and gases. For heating platens, dies, molds, moving metal parts . . . anywhere you need fast, clean, economical and easy-to-control heat up to 1100° F.

Let the Chromalox Sales-Engineering staff solve your heating problems . . . electrically

### Write for your copy of Catalog 50

Contains information on complete line of Chromalox Electric Heaters, elements, thermostats, contactors and switches. Given uses, construction, information and prices, plus basic heat calculation data and heat loss charts.



For ideas on additional applications of electric heat, request Booklet F1550—"101 Ways to Apply Electric Heat." Write today.

## Edwin L. Wiegand Company

7563 Thomas Boulevard, Pittsburgh 8, Pennsylvania

### EDWIN L. WIEGAND COMPANY

7563 Thomas Boulevard, Pittsburgh 8, Pa.

- ☐ Please send me Catalog 50
- ☐ Please send me "101 Ways"
- ☐ Have a Sales-Engineer contact me.

Name \_\_\_\_\_

Company \_\_\_\_\_

Street \_\_\_\_\_

City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_

C. H. Rogers and Associates, 1908 Fourteenth St., N. W., Atlanta 5, Ga.; L. R. Ward Co., 2009-11 Camden St., Dallas 26, Texas; 1614 Tensas Avenue, Houston 5, Texas; Hanson, Wallace & Co., 114 1/2 East Fourth Street, Charlotte 2, N. C.

## News for the South and Southwest (continued)

### Reynolds Expansion

REYNOLDS METALS COMPANY plans to increase its primary aluminum producing capacity to 1.1 billion pounds, as a result of the company's latest expansion program, the largest and most comprehensive in its history.

The bulk of the expenditures for new facilities, about \$200,000,000 out of a total of \$230,000,000, will be devoted to the 270 million pound expansion of primary producing and related facilities, including new bauxite mines in Haiti and Jamaica, and a giant coal-burning power plant. The remaining \$30,000,000 to be spent under the program will be used for fabricating facilities, principally for the modernization and enlargement of present plants.

An interesting by-product of this expansion program is the emergence of coal as a major source of electrical energy for aluminum production. With vast deposits available in the United States, the successful use of coal by aluminum producers is an-

other assurance that this country can economically increase its primary aluminum output to meet growing long-range market requirements.

Construction, amounting to \$22,500,000 will start immediately, adding 50 million pounds of capacity at the company's ALABAMA plant and 20 million pounds at its TEXAS plant.

### New Glidden Service

GLIDDEN COMPANY, Cleveland, Ohio, has announced a new cost-free service designed to reduce sharply the losses caused each year by improper maintenance painting. The unique Glidden "painting analysis" service provides expert technical aid for solving commercial, industrial, and institutional maintenance painting problems.

The service is available through Glidden's headquarters at Cleveland or through any local representative. It includes a new complete line catalog detailing basic facts on various finishes, when and where to use each, selector charts, color chips, and information on surface preparation.

### J. Howard Allison Birmingham, Alabama

J. HOWARD ALLISON AND COMPANY, ATLANTA advertising agency, has opened a BIRMINGHAM office to provide complete agency service in that city for its expanding Alabama clientele.

In opening the Birmingham office, the agency took a step contemplated for some time. Contributing factors were the growth of the agency, expansion of its list of Alabama clients in recent years, and the increasing industrial potential of the north Alabama area.

JAMES E. CRIM of Birmingham has joined the agency as account executive and general manager in charge of the Birmingham office. FRANK A. CASON of Atlanta will be office and traffic manager there.

### Walworth—Atomic Energy

WALWORTH COMPANY, 113-year-old manufacturer of valves and fittings, intends to pursue aggressively new developments in the field of nuclear energy. To this end, it has just completed arrangements for a new research laboratory to speed development of "nuclear plumbing"—valves and fittings designed for use in nuclear power systems.

A major step now being undertaken by Walworth in expanding and diversifying its business is the acquisition of the assets and business of the M & H VALVE AND FITTINGS COMPANY of ANNISTON, ALABAMA. M & H is considered one of the nation's leading manufacturers and distributors for valves and hydrants.

### Vanton Pump in Southeast

The appointment of D. B. GOOCH ASSOCIATES, BIRMINGHAM, ALABAMA, as representatives for VANTON PUMP & EQUIPMENT CORP. has been announced. The territory to be covered by exclusive representation includes MISSISSIPPI, ALABAMA, TENNESSEE, FLORIDA, and GEORGIA.

D. B. Gooch Associates whose personnel are all chemical or mechanical engineers with extensive experience in the chemical and allied process industries, is well equipped to service Vanton pump installations. Since the design of the pump is such that it is used primarily for the handling of corrosive or hazardous liquids, the broad processing background of D. B. Gooch Associates is expected to provide the technical assistance needed to keep up with expanding sales of this unique plastic pump.

install  
peak performance  
into your  
compressors (AIR • GAS • AMMONIA)



Peak performance, maximum efficiency, greater output, and lower power costs can be built into your oldest, and of course your newest, compressors by the installation of VOSS VALVES.

*Check* THESE VOSS VALVE ADVANTAGES:

- ✓ Quiet, vibration-free operation
- ✓ 20 to 60% more valve area
- ✓ less power consumption
- ✓ minimum pressure loss
- ✓ normal discharge temperature
- ✓ lower operating costs
- ✓ utmost safety

*Our detailed proposal for increasing the efficiency of your compressor will be sent you without obligation. Send us the name, bore, stroke, and speed of your machine.*

VOSS VALVES / J. H. H. VOSS Co. Inc. 784 East 144th Street, New York 54, N. Y.

### Flaw Location Movie

A full color and sound, twenty-three minute 16mm motion picture titled "Flaw Location with Dye Penetrants" has been completed by TURCO PRODUCTS, INC., and is available for free showing to industrial concerns, technical groups and other interested organizations.

The film, which is intended primarily for training purposes, visually demonstrates every aspect of dye penetrant inspections from laboratory theory to authentic production-line techniques actually filmed on location during mass production dye penetrant inspections.

Turco field service representatives are available in all sections of the United States to show the film. Arrangements for viewing the film or additional information may be secured by writing to Turco Products, Inc., 6135 South Central Avenue, Los Angeles 1, Calif.

### Burns and Roe, Inc. Baltimore, Maryland

BURNS AND ROE, INC., engineers and constructors, have created a new division with headquarters in BALTIMORE, MARYLAND. The Industrial Division will offer engineering, design and construction service for new or expanding plants, facilities, equipment, processes or functions. RICHARD W. BLACK of Baltimore has been appointed division manager of the Industrial Division.

### Fiber Glass Facilities

Facilities of the FERRO CORPORATION'S FIBER GLASS DIVISION, NASHVILLE, TENNESSEE, are being doubled. Simultaneously, a new fiber glass mat production facility is being built in Southern California. The combination is expected to triple the productive capacity of the Division by the end of next year.

The Nashville expansion will result in the establishment of the first completely integrated plant for glass fabric production in the U. S. A. The new plant will be capable of starting with basic "glass" materials and carrying the fiber process through drawing, twisting and plying, weaving, heat cleaning and resizing operations to the finished fabric ready for use as plastic reinforcement. More than 50 weaving looms will be on the line. A sizeable portion of the equipment will be engaged in the production of woven roving.



Thomas M. Creel, operating out of Atlanta, Georgia now brings you immediate factory service and engineering assistance on installation and use of nationally known Cambridge products:

## Meet Tom Creel new Cambridge Sales Engineer for the Southeast

**WOVEN WIRE CONVEYOR BELTS**  
*combining movement with processing*

**INDUSTRIAL WIRE CLOTH**  
*Bulk or Fabricated Parts*

**SPECIAL METAL FABRICATIONS**  
*Crates, Baskets, Racks, Trays*

Call Tom at any time - - - Ask your operator to get you The Cambridge Wire Cloth Company, Atlanta, Georgia.



### The Cambridge Wire Cloth Co.

Cambridge, Maryland



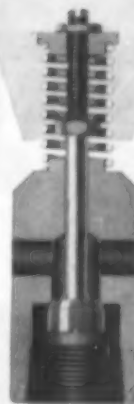
OFFICES IN LEADING INDUSTRIAL AREAS

## FOR VACUUM SERVICE

Foster makes a complete line of spring loaded automatic valves for use in vacuum service - with simple types for protection of stills, heater shells and similar equipment against collapse when cooling down, and more sensitive types for close control of vacuum in manifolds, air lines, and vapor lines for various processing requirements.

Like all Foster valves, they are designed and built for long life with minimum maintenance, and are easy to service when it is necessary. Ask for Bulletin V-101.

## FOSTER Type V VACUUM BREAKERS AND REGULATORS



### FOSTER ENGINEERING COMPANY

835 LEMIGN AVENUE

UNION, N. J.

AUTOMATIC VALVES • CONTROL VALVES • SAFETY VALVES • FLOW TUNES



# CHIMNEYS

CONSTRUCTION AND REPAIR  
AMERICAN CHIMNEY CORP.  
147 4th Ave., New York, N. Y.

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FIG. 17-28  
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FIG. 213  
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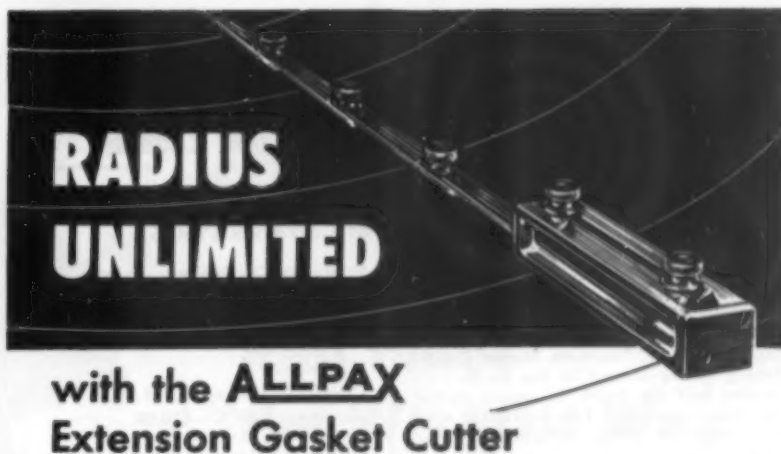
**V-27 OPEN CHANNEL METERS**—Bulletin M22-5, 12 pages, discusses measurement of flow of liquids with suspended solids for water supply and waste treatment applications in industrial plants. Principle of operation; indicating, recording, and integrating combinations (telemetering possibilities and engineering data on flow and weir) are also given.—**BAILEY METER CO.**, 1650 Ivanhoe Rd., Cleveland 10, Ohio.

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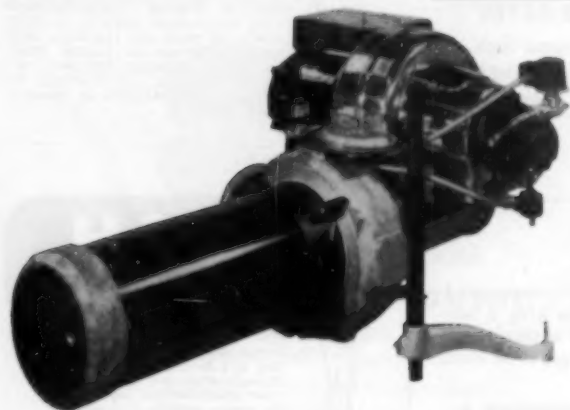
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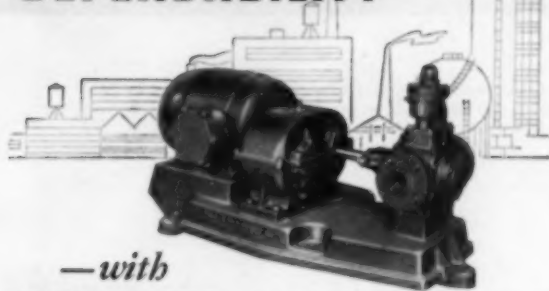
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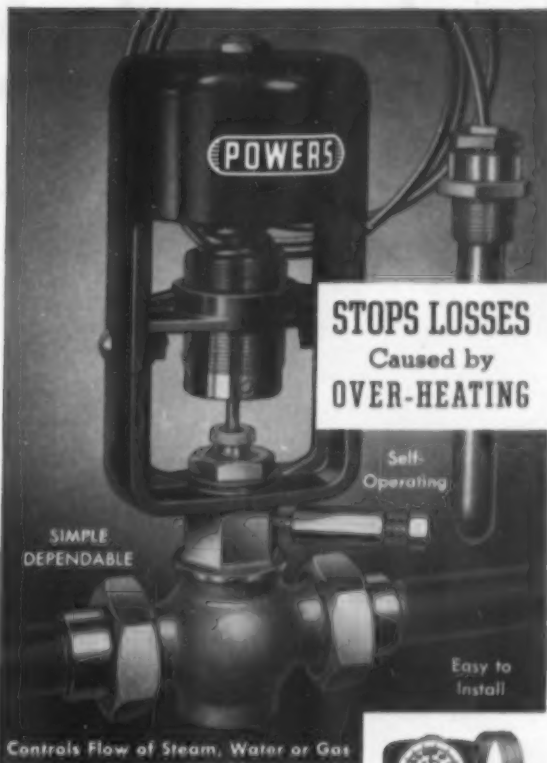
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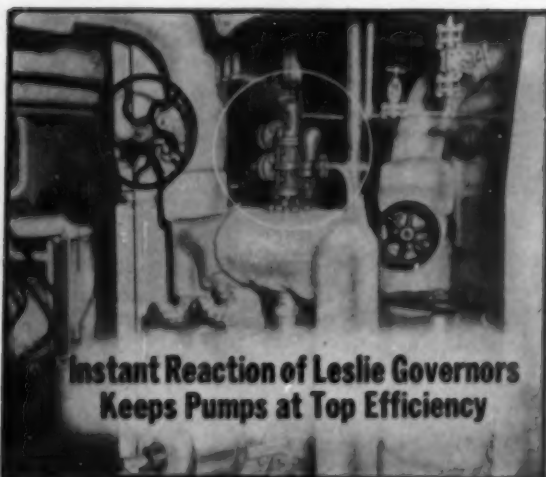
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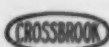
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## M. W. KELLOGG'S METALLURGICAL LABORATORY KEEPS PACE

As shown above, there are many factors—all increasingly important to steam-electric power plants—in selecting materials for tomorrow's main and reheat steam piping needs. Prepared by M. W. Kellogg's metallurgical laboratory, and reproduced here only in part, this chart indicates the extent to which Kellogg's metallurgical laboratory supports Kellogg's fabricating facilities in meeting the challenge of higher temperatures and pressures.

One recent Kellogg assignment, by a leading public utility, is the problem of selecting a super alloy for main steam piping to operate at 5500 psi and 1200 deg. F. A testimonial to the leadership and experience of the M. W. Kellogg metallurgical laboratory, this problem will include selection of special welding materials, welding techniques, and heat testing procedures.

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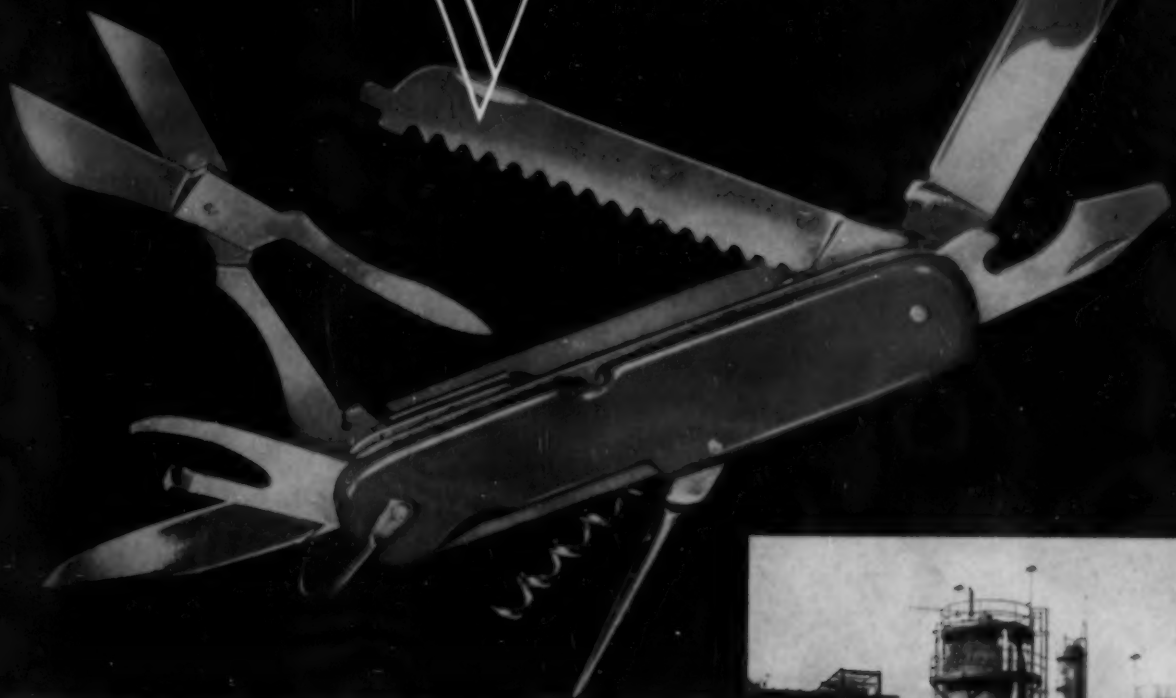


The soundness of Kellogg's metallurgical studies prior to fabrication is evident from the condition of the welds on this stainless steel power piping when inspected recently. In service for 18 months at 2350 psi and 1100 deg. F., over 70 butt welds made with Kellogg's K-Weld\* process were found to be in perfect condition. (Photo at power station, Kearny, N. J., courtesy Public Service Electric & Gas Co.)



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